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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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THE CHICAGO NAUTICAL SCHOOL.

Assistant hydrographic officer, W. J. Wilson, is instructor in the nautical school at Chicago, and he has now quite a number of pupils for the winter term. Capt. James Travis, of the steamer H. L. Worthington is the oldest pupil, but unlike most ship masters of his age, he does not think that

he is too old to learn. Capt. Travis is just on the sunny side of 64 years, and has tossed about the lakes for 39 years. He has never had a serious casualty, but believes that a little science will come handy in his business even now.

The study of the compass will be the principal feature of the winter. Mr. Wilson says that captains are weak in this branch, and that many lake accidents can be laid to this cause.

It is a rather unusual departure, this school for men who have weathered the worst storms which have ever swept the lakes, and some of the old seamen fight shy of "scientific teachin's." Those who have joined the school are promised information which will keep them off the Hyde Park Reef more surely than their big fund of experience.

"There have been great changes since the days of the old wooden steamers," Mr. Wilson remarked recently: "The coming of the great iron vessels—themselves a powerful magnet—has made it necessary to use a little more science in lake navigation. While it is not necessary to be thoroughly familiar with deep water navigation, yet the sailor on these inland seas must know all about his compass. You would be surprised to know how few are posted on this point. This is the cause of so many of our accidents. In a vessel with a steel hull or one which carries a cargo of iron ore, the compass is seldom if ever just right. The captain should learn just what deviation the iron or steel causes his instrument, and lay his calculations accordingly. Unless this is done the chances are good for trouble."

The instructor in navigation conducted a school at Chicago last winter with success, and now opens on his second year.

ABSTRACT OF BIDS.

Abstract proposals received at Duluth, Minn., for constructing breakwater in the harbor at Agate Bay, (Two Harbors,) Minn., opened January 20, 1898, by Major Clinton B. Sears, Corps of Engineers, U. S. A.

No.	Name and Address	300 running ft. (more or less)		Total.
		For cribs, stone filling, under-filling and rip-rap in place, 18½x24 ft., per running foot.	For super-structure, including stone filling. Per running ft.	
1	Norris & Fitzgerald, Duluth, Minn.	\$43 75	\$16 75	\$18,150 00
2	King & Steele, Duluth, Minn.	37 20	13 80	15,300 00
3	Lipsett & Gregg, Sault Ste. Marie, Mich.	39 00	14 50	16,050 00
4	Frederick Davis, Duluth, Minn.	42 90	12 00	16,470 00
5	Porter Bros., Duluth, Minn.	39 20	14 00	15,960 00

As the lowest responsible bidders the firm of Messrs. King & Steele, of Duluth Minn., will no doubt receive the contract; at least such has been the recommendation of the district engineer.

MATHESON & GRANT'S (London) annual review of the British trades in 1897 contains the following interesting illusions to American competition in shipbuilding: Although the actual tonnage launched in 1897 has been less than in 1896, namely 1,223,000, as against 1,400,000, all the yards have full present employment, and when the impediments arising directly or indirectly from the engineers' dispute have been removed, employers and workmen are likely to have prosperous trade until the end of the year. At home improved freight rates encourage the building of cargo steamers, and the competition in all maritime countries for high speed and improved battleships is as keen as ever. The growing capacity of foreign builders, especially in Germany and the United States, is ominous for the future supremacy of this country in its most important national industry.

AMERICAN BOYS HAVE NO CHANCE TO BECOME SEAMEN.

Hardly a day passes that Shipping Commissioner Tolman does not have two or three applications from boys who want to ship as sailors, says the Portland, Me., Press. The most of these boys are between the ages of 15 and 18 years, and have never been out of the sight of land or seen a vessel larger than a small coaster. All of these applications are treated kindly by Mr. Tolman, who, after questioning them as to their homes and parents, their intentions and reasons for wanting to go to sea, generally ends the interview by assuring the would-be sailors that he has no opportunity for them to ship at present, but will bear them in mind and give them the first chance that comes along. He advises them to call again in a few days, but it is not often that the shipping commissioner ever hears from them again. The boys are anxious to see something of the world, and in nearly every case have good homes and opportunities for entering some kind of business which will prove more lucrative and far more pleasant than a sailor's life.

The applications from the boys are so numerous that Mr. Tolman does not pay much attention to them now. He seldom has a chance for boys to ship on large vessels, as no sea captains wish to take them. There is sometimes a chance for boys to go to sea in the larger vessels which are bound on long voyages for South America or the West Indies, but as nearly all the vessels sailing out of Portland are in the coasting trade the shipmasters have no use for boys, and will not take them if they can help it.

And yet, though the shipmasters will not take the boys and give them an opportunity of learning seamanship, they all complain because there are not to be found American sailors. Said one shipmaster the other day: "I have not had an American sailor on my vessel for so long that I can not remember the last one. They are all Norwegians, Danes, Germans, Nova Scotias or P. E. I's, Irishmen or other foreigners. It seems as if there were no American sailor's afloat now."

When Shipping Commissioner Tolman asked this very shipmaster if he had room on board his vessel for a bright young American boy who wanted to learn seamanship, the master replied: "Why, my dear sir, what use is a boy to me? I couldn't afford to pay him \$5 a month. I have no use for a boy on my ship. A man who eats of the bread of my owners must be able to pay for it and his salt besides."

Until some chance is given boys to learn seamanship on American vessels there is little chance of there being a great increase in the numbers of American seamen. This is recognized to be a serious question by the Navy Department, and for the purpose of encouraging American boys to learn seamanship the apprentice service was inaugurated. This is giving the navy an able corps of petty and warrant officers, but the enlisted men in the navy are still mostly foreigners. The reluctance of shipmasters to take boys into their vessels and teach them the rudiments of seamanship probably explains the scarcity of the American sailor on board the Yankee men-o'-war and in the merchant marine.

TIDAL WAVE AT SHEBOYGAN.

The fleet of vessels in winter quarters at Sheboygan, Wis., experienced a severe shaking up on Monday last occasioned by a tidal wave, the third of the season.

The wave was caused by the northeast gale, and the water swept up the river in such great volumes that the harbor was turned into a small whirlpool. Ice from 12 to 16 inches thick was ground into chunks and vessels were torn from their moorings. The schooner Mason crashed into the steamer Seymour, demolishing the latter's after cabin and losing her own jibboom and fore-rigging. The schooner Duval jammed into the steamer Wetmore and three schooners. Other vessels parted their lines and were tossed about, but were secured before any serious damage was done.

NEWS AROUND THE LAKES.

DETROIT.

Special Correspondence to The Marine Record.

Mr. Galway, Supervising Inspector of the Steamboat Inspection Service in this district, rises to remark that since the White law went into effect there has been no collisions in St. Mary's river. He ought to know that the provisions of the White law does not apply there and that special local rules are enforced which do not meet the views of masters and pilots, so they are to be changed.

John Shaw, Esq., the admiralty lawyer of this port, appeared before the board of supervising inspectors of steam vessels at Washington, on Thursday last, in conjunction with Messrs. McCurdy and Thompson, marine insurance agents, of Chicago. They asked that the law and rules relative to the Great Lakes be codified and printed separate from law and rules of coast and river marine, claiming it would obviate bad mistakes.

Capt. N. P. Stewart, who brought action against the Huron Transportation Co., of Au Sable, Mich., in the circuit court to receive \$337 unpaid salary, was given a verdict for the sum claimed by a jury. The case has aroused considerable interest as Capt. Stewart is an old and respected citizen of Detroit. The evidence introduced by the defendants was of a character to damage the complainant's reputation, and several libel suits may follow.

Capt. James Millen has been named as candidate for the office of Board of Public Works Commissioner and has the best elements of each party in his favor. Capt. Millen's thirty years' residence in this city and his well-known upright sterling character should be sufficient to silence even his political enemies. The captain is losing no rest over the result in any case, the nomination for office was unsolicited on his part, and he is the same genial, all round gentleman, as marine men know him.

The firm of F. W. Wheeler & Co., West Bay City, find that although a liberal advance was recently made in the pay of riveters and laborers, the men are yet discontented. In the future, as in the past, the shipbuilding company will conduct its own business without reference to labor unions. It now looks, however, as if ship as well as engine builders and boiler makers should also form an association among themselves and put "steel to steel" or the quotation might be spelled by altering one letter just to equalize things on both sides.

Relative to the wrecking expenses and large hull repairs that the Rosedale's underwriters will have to meet, an insurance man said the other day that she was one of the most peculiar risks taken last season and it was a fitting climax when she stranded on east Charity Reef at the western end of the St. Lawrence river. The Rosedale had no less than five separate casualties during the summer and each occurred on the 4th day of the month.

When Capt. McDougall, general manager of the American Steel Barge Co., was here last week attending the meeting of the Lake Carriers' Association, it was learned that the whaleback steamer City of Everett arrived at Charleston, S. C., recently 15 days out with a cargo of iron ore from Huelva, Spain. She will leave in a few days to fill a charter for a New York cargo of phosphate. This is the whaleback's first visit to an American port since last year, when she left San Francisco with food for the victims of the Indian famine. The City of Everett ought to be on the Pacific coast now, but as Capt. McDougall has started out there he may have several more whalebacks built ready to charter when the Yukon river and Klondike rush takes place in the spring.

CHICAGO.

Special Correspondence to The Marine Record.

Grain freights are steady this week on the basis of 2½ cents on corn.

The heavy snowstorm which commenced here on Saturday put a temporary stop to all loading of grain.

The North Branch Lumber Co., Chicago, have sold the steamer Chas. Rietz, and barge John Mark, to John C. Nessen, of Manistee.

At the yards of the Chicago Ship Building Co. the steamer City of Bangor is still in dry dock. The steamer America will be docked when the Bangor goes out.

A number of masters, members of Chicago Lodge, No. 3, of the Shipmasters' Association, have gone to Milwaukee to attend the festivities at the Shipmasters' grand convention held there this week.

It is rumored that Peter O'Connor, owner of the extensive dock and warehouse at the foot of Michigan street, intends to run a line of passenger and freight steamers between Chicago and St. Joseph, the coming season.

The Independent Tug Line have several of their tugs busy attending on the waterworks cribs, the heavy gale and snowstorm having rendered it necessary to have a tug at each crib to assist the crews by action of their propeller wheels to keep the crib port holes free from ice.

"We cannot give the Rivers and Harbors Committee a better object lesson as to our needs for the Chicago River," said Representative Belknap, a day or two ago, "than to take them to the scene of the proposed improvements and show them the varied commerce of our city. Washington's birth-

day will be a most appropriate time for the proposed visit of this committee, for we will mix patriotism with profit, all for the glory of Chicago."

The marine men in this city are very much pleased at the appointment of Capt. James S. Dunham, as president of the Lake Carriers' Association, and they all feel proud that Chicago's representative should have established a precedent for a banquet to the members of the Association and their friends at their annual meeting.

The large steel barge Australia, recently built by the Chicago Ship Building Co. for James Corrigan, of Cleveland, loaded at South Chicago, 226,000 bushels of corn, weighing 6,328 net tons. This would give her a gross capacity of 5,650 tons, a no small cargo for one of our modern lake schooners, having a gross registered tonnage of 3,745.

The winter cargo rates adopted by the Chicago Board of Marine Underwriters range from 7½ to 12½ cents per one hundred dollars every fifteen days, according to the class of the vessel. For the first trip to Buffalo the rates range from 22½ to 60 cents per one hundred dollars, according to class. A large amount of the grain placed for the grain fleet at Milwaukee is being insured under a contract with Chicago agencies.

The reception and ball of Chicago Lodge, No. 3, of the Shipmasters' Association, held Wednesday evening, at the Medinah Hall, was largely attended and was a complete success. Capt. C. H. Hubbard, the newly appointed president, and Mrs. M. E. Connors, and Capt. J. F. Loftus, ex-president, and Mrs. Frank Root led off the grand march. The music was excellent and those present spent a very enjoyable evening.

The stocks of grain in Chicago elevators on last Saturday evening were 11,208,000 bushels of wheat, 21,047,000 bushels of corn, 1,405,000 bushels of oats, 707,000 bushels of rye, and 784,000 bushels of barley. Total, 35,151,000 bushels of all kinds of grain, against 27,303,000 bushels a year ago. For the same date the secretary of the Chicago Board of Trade states the visible supply of grain in the United States and Canada as 37,153,000 bushels of wheat, 41,789,000 bushels of corn, 14,534,000 bushels of oats, 4,002,000 bushels of rye, and 3,161,000 bushels of barley. These figures are smaller than the corresponding ones of a week ago by 685,000 bushels in wheat, larger by 655,000 bushels in corn, and smaller by 529,000 bushels in oats. The visible supply of wheat for the corresponding week of a year ago decreased 1,164,000 bushels.

Capt. Peter Nelson, formerly harbor-master of Chicago, died at his home, No. 128 North Carpenter street, Monday morning. He had been sick with Bright's disease for four or five weeks, and for the past two weeks had been confined to his bed. Capt. Nelson was born in Paaskraund, Norway, June 17, 1822. For several years he sailed before the mast on ocean ships and came to the United States in the early '40s. In 1849 he came to Chicago, engaging immediately in service on lake boats. For a few years just previous to the fire he was harbor-master of Chicago. After the fire and until 1877 he was again engaged in lake traffic, but while spending some time ashore in that year he sustained a fracture of his left ankle. Amputation was necessary and this ever after unfitted him for active service. He retired and lived on his savings. The funeral will take place Thursday, at 11 o'clock, from the house.

BUFFALO.

Special Correspondence to The Marine Record.

Capt. J. J. H. Brown will leave for a trip to California next week.

The steamer America has discharged her cargo and will go into dry dock to repair the damage she received last summer in collision with a tug at Chicago. The Western liner Buffalo is in dry dock for extensive repairs. The rebuild of the burned tug Danforth has begun also.

The strong west wind on Sunday drove the water up Buffalo creek. The Union Dry Dock Co. suffered considerable damage, as the water flowed into the dry dock, that is now being lengthened, and partly submerged the yard. Supt. Gaskin was on hand with assistance and took all necessary precautions to minimize the loss until the water receded again.

The strike fever has not reached the shipyards and dry-dock work here yet, but according to union tactics there is no telling when it may do so. It would be a check to windward for employers to make a good strong strike clause in all future contracts as there is no vouching for labor being steady and reliable under present conditions.

T. S. Fassett and J. W. Robinson have been given a hearing by the house committee on rivers and harbors, in behalf of the appropriation asked for the completion of the work of deepening the channel of the Niagara river in the vicinity of Tonawanda. The engineer officers in charge of the work have recommended a further appropriation of \$250,000. Chairman Hooker's committee will incorporate this amount in the next bill.

Maj. T. W. Symons, Corps of Engineers, U. S. A., contributes an excellent article to the Buffalo "Commercial," on Capt. Mahan's latest work, entitled "The Interest of America in Steam Power—Present and Future." The "Commercial," which devotes nearly three columns to this review, says of its author: "Maj. Symons is an officer who has made many friends in Buffalo, and one who graces his profession with his scholarship, and his intelligent treat-

ment and discussion of topics in which this Government has a vital interest."

John F. Parkes, of Tonawanda, has asked the people of Niagara Falls to assist him in the scheme of building a dam across the Niagara just above that city for the purpose of raising the lake levels. He asserts that the government is taking steps looking to the construction of such a dam at Buffalo, and is sure that the place for it is at a point where it will deepen the Niagara as well as the lakes. He adds that the Chicago drainage canal will carry off as much water as now flows over the American fall at Niagara, and that the need of a dam will then be imperative. There is as yet no response to the call.

While in marine insurance circles the situation is reported unchanged, there is a visible lining up for business on the basis of last season's rates apparently. Johnson & Higgins report that they have secured all their last year's business again, but as they make no rates and can deal with whom they please, this settles nothing but their independence of the rate war which is certain to be waged again. The fact that no one obtained lead enough last season to warrant any assumption of a majority interest in underwriting circles will make the present struggle for supremacy as doubtful as it was then.

Two seasons ago the Union Steamboat Co. reached the conclusion to lessen the fuel consumption of the steamers Owego and Chemung and increase their carrying capacity by removing three of the six boilers from each. There would be a reduction of speed to twelve or thirteen miles per hour, the officials figured, but as an offset the increase of carrying capacity on each steamer was estimated at 500 tons. The change was to have been made last winter, but a pressure of other work rendered postponement for a year necessary. As a matter of economy, however, the boiler service on each steamer was cut down one-half during the past season, with satisfactory results, and the removal of the spare boilers will now be commenced.

Capt. Charles Maytham has returned from Washington, where he went as a delegate from the local harbor association, to attend the national meeting of the American Association of Masters and Pilots of Steam Vessels. The business occupied the whole of last week. Officers elected for the ensuing year are: Capt. W. S. Van Keuren, Kingston, N. Y., grand captain; Capt. William Durkee, Brookline, Mass., grand first pilot; Capt. Albert Fitz, Toledo, O., grand second pilot; Capt. L. B. Dow, Brooklyn, N. Y., grand purser; Capt. Benjamin F. Perkins, Camden, N. J., grand captain's clerk. There are nine local branches of the order termed Harbors, along the lakes. Six were represented at the national meeting. The membership is restricted to masters and pilots. The newly-elected officers of the Buffalo branch are: Capt. F. M. Drake, captain; Capt. Harry Warwick, first pilot; Capt. James Fontaine, captain's clerk; Capt. Charles Maytham, purser.

CLEVELAND.

Special Correspondence to The Marine Record.

The C. & B. Line intend calling at Erie three times a week during next summer.

The usual pilfering is going on around the docks, and nothing of value should be left ungarded while the epidemic continues.

The union riveters at the Globe Iron Works Co. are on strike and the yards have now been declared open to all competent labor, irrespective of union affiliations.

There is little or no talk of chartering for next season's business as yet, and some preliminary work regarding the ore output and sales will have to be gone through with before any work can be done.

Some dissatisfaction is found among the riveters at the Lorain yards of the Cleveland Ship Building Co., but it is expected that the differences will be promptly settled.

It is learned that Mr. John F. Pankhurst, general manager of the Globe Iron Works Co., is daily improving in health. He is at present staying at a small town in New Jersey.

The total membership of the M. E. B. A. is now 13,500, no less than 1,300 of which has been added during the past year, and there is about \$1,500 in the national treasury of the society.

At a meeting of the local lodge of the American Association of Masters and Pilots, held on Monday night, resolutions endorsing Capt. C. E. Benham for the office of collector of customs were adopted.

The most severe gale of the winter meandered over the lakes on Sunday, but as all vessels except the winter ferries are tied up, no damage was done. Shenango No. 1, of the Conneaut and Port Dover Car Ferry Line sheltered at Erie, being unable to make Conneaut.

The Menominee line steel steamer Briton is docked in the Ship Owners' dry dock for repairs to bottom damage. Twenty-four plates will be taken off and some frames straightened and renewed.

Wednesday, February 2, is the date fixed for the annual reception, ball and banquet of the marine engineers of this port. For seventeen years the Cleveland organization has met with its friends in this way, and these gatherings have always been pleasant.

The Bessemer line steamer Sir William Fairbairn docked

in the Cleveland Ship Building Co.'s new dry dock at Lorain on Wednesday, and is the first vessel to be dry docked with the company. Work was begun at the plant February 22 of last year, and this date finds the new plant practically completed. The Fairbairn will receive extensive repairs.

At the annual meeting of the Dry Dock Association of the lakes, which was held at Milwaukee last week, Mr. James C. Wallace, of the Cleveland Ship Building Co., was elected president and Mr. R. L. Ireland, of the Globe Iron Works Co., vice president. Mr. Hamilton J. Mills was re-elected secretary and treasurer. The last year's card rate for docking was adopted for 1898.

The large steel schooner Malta was in the Cleveland dry dock this week for repairs to bottom damage; fourteen plates were removed. The whaleback barge 107 is now in dock for bottom repairs, also to straighten some side shell plates injured by collision. This work will occupy the dock until the end of the week, when the Aurania will be dry docked.

The Cleveland Ship Building Co.'s new dry dock at Lorain was pumped out Monday in two hours. The new dock is in first-class condition, and there has been no trouble to speak of from leaks. The big steamer William Fairbairn, of the Bessemer fleet, which will be the first boat to be placed in the new dock, will dock this week. The new dock, which is the third largest in the United States, has plenty of work ahead.

It is not generally known that Mr. Martin Mullen, of the firm of the Cuddy-Mullen Co., coal shippers and fueling agents, is an expert amateur billiard player, in fact one of the best in the country. This excellent pastime, as is well known, requires practice, a steady nerve and a fine sense of how to calculate angles. The latter attributes Mr. Mullen is markedly in possession of, as his superior prowess with the cue goes to prove.

Another meeting of the executive committee, of the Ore Men's Association, was held at the office of M. A. Hanna & Co., on Monday. A member of the association said that considerable work will have to be done before prices and allotments are fixed. Although no action has been taken in the matter, the general opinion is that the Mesaba range owners will be out again this year, and that the make-up of the association will be the same as last year.

Capt. C. E. Benham has been in Washington this week looking after the office of collector of customs for this district. His indorsements are numerous and voluminous, and as he has been working for the office for some time past his ever present energy will no doubt induct him safely into the collectorship. There could be no better appointment, from a vessel owners' point of view, than Capt. Benham, who is a city councilman, shipowner, broker and surveyor with a host of friends.

The semi-monthly meeting of the Civil Engineers' Club was held at Case Library Tuesday Jan. 25, at 7:45 p.m. Mr. Lewis J. Germain, C.E., of Cuyahoga Falls, formerly city engineer of Chicago, addressed the club by invitation, on the subject of "Hydraulic motors applied to electricity." Mr. Samuel T. Todd read the paper of the evening, entitled "Power consumption on electric railroads." After adjournment luncheon was served.

At the annual meeting of the Gilchrist Transportation Co. held in Vermillion the following officers were elected: J. C. Gilchrist, president and treasurer; R. E. Schuck, vice president; A. J. Gilchrist, secretary. The directors are: F. W. Gilchrist, J. C. Gilchrist, A. J. Gilchrist, R. E. Schuck and W. H. Gilcher. The Lake Shore Transportation Co. also elected J. C. Gilchrist for president and treasurer; R. E. Schuck for vice president; and C. P. Gilchrist for secretary. The directors are: J. C. Gilchrist, C. P. Gilchrist, R. E. Schuck, J. E. Schuck and Lewis Woodruff.

The Cleveland Chamber of Commerce adopted the following resolution this week after a report had been submitted from the committee on harbor and docks and the maritime board: "Whereas, the insufficient depth of water at the entrance of the breakwater at this port, and the dangerous currents and cross-seas which are there created during stormy weather are a menace to navigation and a serious detriment to the commerce of this port; therefore, be it resolved by the Cleveland Chamber of Commerce that Senators Foraker and Hanna and Congressmen Burton and Beach be and they are hereby respectfully requested to advocate the passage of such legislation as may be necessary to provide for the improvement of said breakwater entrance."

Mr. Walfrid Sylven, superintending engineer of marine construction of the United States light-house service, stopped in the city on his way to Detroit last week to inspect a steam steering apparatus which a firm in Cleveland is constructing for one of the new vessels of the service now under construction at Baltimore. Granting that Congress makes the necessary appropriation there are to be three light-house vessels and two light-house tenders constructed for use on the lakes the coming year. One object in the construction of these tenders will be to lengthen the period of navigation. When the light-house service is suspended in the fall because of inability to get to the lights on account of the ice, navigation must cease. "The new boats will make it possible to reach the lights through the ice," said Mr. Sylven, "so that later navigation on the lakes each season, in so far as the lights are concerned, may become a possibility of the future."

Such is the way the prognosticators of weather at this port prognosticated on Monday last: "For Cleveland and vicinity: Fair tonight; rain or snow and warmer by Tuesday afternoon; increasing southerly winds." Taken literally the

prognostic marks the vicissitudes, alternation, succession or mutation of weather conditions existing at this period of the year at the greatest port in northern Ohio. Truly there is lots of weather floating round at this time, as I learn from the above that we might have had it fair, rain or snow and warmer while the wind increased southerly, and the joke comes in on account of the weather being exactly as the forecast called for. How do other lake ports feel it?

The second revenue cutter recently launched from the yards of the Globe Iron Works Co., is intended to be stationed on Lake Erie, and it is a widespread opinion that Cleveland is a safe enough harbor for a little craft like her to make a home port of. June 1st is now mentioned as the time she will go into commission, and Buffalo and Erie as well as this port, are desirous of having her mud-hook hold into some of the state ground. New York, Pennsylvania and Ohio being thus pitted against each other in the outcome, it is easy to guess where the Onondago will make a bone reef, but a little money should be spent in dredging behind the west breakwater here, before she takes up her more less permanent moorings.

ASHTABULA HARBOR.

Special Correspondence to The Marine Record.

The Fairport Fish Company's tug, Neal Dow, is being rebuilt at Laird & Sons' shipyard. She is getting some new outside plank, new decks and cabin.

During the past season the Ashtabula Fishing Co. have made extensive improvements in their plant, and next spring, in addition to the tug Effie B., they will put a new tug into the business. The new boat is now under construction at Devney's yard.

Capt. Mulholland is here looking after the repairs to the steamer Fred. Kelley, of the Bradley fleet. She is getting a new Scotch type boiler. It will be placed aft of the engine so that she may have more cargo space. She is getting new decks aft, cabins altered and general repairs.

At Laird & Sons' shipyard they are rebuilding the tugs Neal Dow and Willie and Harry. They are also building a small naphtha launch and have orders booked for two other launches of the same kind, and repair work on a dredge and two mud scows for the Lake Shore railroad.

At J. P. Devney's shipyard a new tug is on the stocks, being built to the order of the Ashtabula Fishing Co. She is to be 80 feet over all, 17 feet beam and 8 feet depth of hold. She will have a marine boiler, to be built by the River Machine and Boiler Works, of Cleveland. Mr. Devney is also doing considerable repair work.

Capt. George Owen, secretary and manager of the Fairport Fishing Co., went to Cleveland, recently, to close the purchase of the L. W. Knapp from the William J. Hooper Manufacturing Co., of Baltimore, Md., to put into their fishing business. The consideration is not given. This company has an extensive plant, including packing houses for the cold storage of fish for winter use. Beside the catch of the three tugs owned by the company, they handle the catch of six and often of eight other boats in the season. Their warehouse, fronting on the river, is 70x120 feet, and on Bridge street, for the retail trade and office, 40x60 feet.

PORT HURON.

Special Correspondence to The Marine Record.

Frank H. Danger says: "The vessel inspectors are now kept busy examining engineers and pilots. On an average each steam vessel turns out four new candidates yearly."

There is still a mystery around the disappearance of J. P. McKinnon, of Cheboygan, who has been missing since last summer. He boarded the boat at Cheboygan and was seen as far down as Port Huron, but when she arrived at Detroit he was not to be found. His baggage is still in the D. & C. office, but unless something turns up soon the property will be turned over to Mrs. McKinnon, who is now in Detroit.

J. M. Jenks, a large grain shipper with offices in Chicago, Boston and here, has purchased the Fitzgerald Iron Works property on Military street for \$5,000. During the summer he will build an elegant residence on the bank of the river. The place will be known as "Maxwell Brae," after Mr. Jenks' daughter, Maxwell. As soon as the house is completed the family will take up their residence at Port Huron.

The new government life-saving station on the lake shore will be completed this week. During the progress of the work contractor Kaumeier and Inspector Fourge had several rows, and once one of Mr. Kaumeier's sons and the inspector came together with considerable force. Kaumeier claims that Fourge has compelled him to do many things which the specifications do not call for, and there has been continual kicking over the work all through.

The Jenks Ship Building Co. has begun the construction of a wooden harbor tug, which will be one of the forerunners of the modern fleet of tugs now being built on the lakes, and will be one of the most powerful harbor tugs on fresh water. Her molded dimensions are 80 feet keel, 20 feet beam and 12 feet depth of hold. Her machinery now under construction at the Phoenix Iron Work of this city will be of the triple-expansion type, with cylinders 14, 22½, 36 x 28 inches stroke, designed to develop 900 I. H. P. when running at full speed. She will have one 10x14 foot fire box boiler of the marine type, having 2,400 square feet of heating, and to be allowed a working steam pressure of 200 pounds. A

forced draft system will be installed. She will be modern in every respect, being fitted with steam steerer, and capstan and will carry a large fire pump. Besides being a powerful harbor tug her immense power and her special lines will make her a very successful ice crusher. The firm have considered all points of design and have embodied in the construction sufficient bunker capacity to give the tug a large steaming radius. The firm are the builders of the now well known and successful harbor tugs C. D. Thompson and B. B. Inman, which assures the new tug of being a pronounced success.

John McLaughlin, of Brooklyn, is here trying to organize a company to build a number of Brown camel devices for raising sunken vessels, etc. Mr. McLaughlin says that inasmuch as Mr. Brown, the inventor, is a Port Huron machinist, he would like to see this city the headquarters for the wrecking outfits. His plans have been submitted to all the shipbuilders of the country and without a single exception, all pronounce Mr. Brown's outfit the finest and most practicable yet invented. Mr. McLaughlin has headed the list with \$5,000 and hopes to secure Port Huron and eastern capital enough to build the device. He says Port Huron can be made the greatest wrecking headquarters in the world.

WEST SUPERIOR, WIS.

Special Correspondence to the Marine Record.

Thomas Dunsmore and Fred Henderson, of West Superior, employed as deckhands on the steamer Aurora, fell into the hold of that vessel on Friday last. Dunsmore received injuries from which it is feared he will die. It is thought that his skull is fractured at the base of the brain. Henderson was uninjured beyond a severe shaking up, and the cracking of a rib or two. The men fell from the lower deck into the hold, a distance of about fifteen feet.

Capt. McDougall, general manager, returned this week from a tour of the principal lake ports, including Milwaukee, Cleveland, Chicago and Detroit, where he attended the Lake Carriers' annual meeting. After a brief stay he left again for Everett, Wash., and it is now an open question if he won't get to work and invent an air-ship, duly protected by patents, for his own special use, that is to say, he is kept on the wing, or flying around from one end of the continent to the other so lively that a craft of his own that could look down on railroads, and sail along at his own sweet will, would be a great boon to the lone traveler, however, he looks well, never felt better in health, and altogether if anyone can stand it, he can.

The yards of the American Steel Barge Co. is a very busy place this winter, although dry docking operations, on account of ice, can not be carried on in the winter months here, like it is at lower lake ports; consequently a dozen vessels are waiting for an early chance to dry dock, although it will no doubt be a month or two hence before they can get in. The large new tow barge Constitution is in dock, and those waiting are the Masaba, Manola, Maruba, Sagamore, Pathfinder, Victory, Colby, Mather, Northern Queen and the whalebacks No. 117, 118 and 202. The plant is not confining itself strictly to marine work, as at the present time they are working on heavy plates for the new piers at Duluth. This in itself is a \$40,000 contract. They have also taken the contract for the ore spouts for the extension of No. 2 high level dock D. M. & N., Duluth, and will build a refuse burner for the McCord Lumber Co., West Superior, a \$5,000 contract; so that it is altogether likely the full force of workmen will be kept busy until spring shines around again. The new crane (traveling gantry,) which the company is building from the plans of the Wellman, Seaver Co., of Cleveland, is a fine piece of work, and will be completed in about a week. The machine shop will be fully equipped, and ready for all classes of work at the end of this week.

RESOLUTIONS OF SHIPMASTERS' ASSOCIATION.

The Shipmasters' Association, in annual session at Milwaukee, passed resolutions on Wednesday requesting a system of lights and buoys in the St. Lawrence river, a light-ship on Lansing Shoal, Lake Michigan, and an urgent request to Commander Shoemaker, of the Revenue Marine Board, to change the mooring place of the cutter in the Sault canal, as under the present arrangements masters are greatly inconvenienced at that point in passing the Gresham.

The following officers were elected: President, W. E. Rice, Port Huron; vice-presidents, Henry Leisk, of Milwaukee, and H. C. McCallum, of Detroit; treasurer, Lyman Hunt, Buffalo, re-elected; secretary, W. A. Collier, Cleveland, re-elected.

The association ordered a message sent to President McKinley, endorsing the application of C. E. Benham, of Cleveland, for the position of collector of customs for the Cuyahoga district.

Capt. C. H. Sinclair and Albert Gibbs completed the survey on the steamer Iosco, which ran upon Grey's reef in December. No estimate of the cost of repairs has yet been made. The Iosco will require a new keel and garboards, and the renewal also of about one-third of her bottom planking. The strain while on the reef put the hull out of shape somewhat, and it will be necessary to ream the oakum out of the seams and recalk the vessel throughout. It will take thirty days to complete the repair work, and the expense will be a heavy contribution from the underwriters.

AN ADMIRALTY LAWYER'S AFTER DINNER STORIES.

After the banquet tendered to the members of the Lake Carriers Association on the 19th inst., at Detroit, by the incoming president, Capt. James S. Dunham, on the occasion of the annual convention held in that city, there was the usual "feast of wisdom and flow of wit" sandwiched in between some good, hard common sense remarks. Mr. James E. Davidson, son of Capt. James Davidson, the West Bay City shipbuilder and owner, showed himself to be the worthy son of a noble sire and held the entire assembly with rapt attention while he was speaking in favor of moderate-sized handy tonnage for the general lake trade.

One of the most amusing talks, full of visible excitement and yet glistening with all around jocular raps at certain idiosyncracies now engaging the attention of vessel-owners, underwriters, steamboat inspectors and others, was delivered by C. E. Kremer, Esq., admiralty lawyer, Chicago, and one of the most astute at that. Mr. Kremer said, and we vouch for every word, as follows:

When I get through with what I have to say it will be very much such an outcome as was the case in the story of the Irishman: An Irishman took a full bottle of whiskey to his room and drank it and went to sleep, leaving the empty bottle on the table at his bedside. He awoke in the night and found a man in his room and asked, "What do you want?" "Nothing," said the man. "Well, you will find it there in the bottle."

An occasion of this kind could not be passed without somebody saying something about reforms.

A reformer is a man who wants all other people to reform. He is so well formed himself that he does not need to be reformed, but if every man was his own reformer we would need fewer reforms. I am a married man and have practiced law so long and am so accustomed to being overruled in matters that I have advocated that I am not advocating any reforms.

I have seen and heard a great many things, but in my hairless, careless way I just notice them and I'll tell you how they strike me.

The greatest good to the greatest number is the well-known motto in this country. This is why we have large corporations, trusts, labor unions, syndicates and large vessels. There is no one in this association who has done more to live up to this motto than our new president. He is a public benefactor.

He has been and still is busy in deepening the channels, raising the rocks, buoying the shallows and lighting the narrows, so that a man who has by strict economy accumulated a few millions can build ships that will do justice to this improvement and enable the vesselowner to carry the products of the field, and the farm, and the mill, and the mine for the lowest possible price, and the great and good public rejoice, so that the good we do will not only live after us, but will live on us.

Let us consider some of the reforms that have been introduced during the last year. It has been ascertained, so they say, that the time-honored saying that insurance companies, like women, conceive with pleasure and give forth with pain, is no longer true.

It seems that it is the vesselowner who pays for the losses. And it has been demonstrated that he can save money by doing so; in fact, it is the only way he can save money. The insurance companies say to the owner what the man said when he wanted to borrow 75 cents, the man of whom he wanted to borrow saying, "I haven't but 50 cents." "Well, give me that, but remember you owe me a quarter."

It has been ascertained by a new and secret process of inspection and classification of vessels that they are so much better than it was supposed, that they can be insured at a very much lower rate than it was thought possible.

This secret process is so valuable that it is kept under lock and key and being deadly in its effects on underwriters it is marked "poison."

I was told that reforms were necessary in this matter of inspection and classification because in many cases the owner was examined instead of the vessel, and the mistake was made in taking the insurance on the vessel instead of the owner, because when the vessel was a total loss the owner had only sustained a small "P. A."

However, this inspection is now all changed as we know that the lakes are green and not blue.

The underwriters are doing a noble work in educating the masters and the masses by aid of the postal card, and an open correspondence in the newspapers. In this way much information is obtained and distributed. The postal card feature (entirely new) has proved a great boon.

I understand this means of conveying information has proved so valuable that it is proposed that letter boxes be placed on all vessels so that whenever the captain has lost his bearings, or is where he can't be found, or is in any kind of trouble, all he has to do is drop a postal card in his letter box, and there you are. The whole world knows where he's at.

I understand a man is now experimenting with a view of inventing something so that when a vessel gets to be twenty years old she is to be made fire proof. It has been shown that with age she works so much and is so dry that she is liable to take fire and burn at any time. Small vessels are more liable to get hot in this way than large ones.

Capt. Davidson told me that if there was some way of fire-proofing the vessels he had built, when they got over their youth, that they would last for a hundred years. They found an old Viking ship in Norway not long ago that was over 300 years old and still sound. It is rumored that Capt. Davidson built her, but some people doubt this.

Shipbuilding has made great progress. Nowadays if you can get in your order on Saturday before 2 o'clock you can have a steel hull built by a week from the following Monday, but if you neglect it and do not get your order in until after 2 o'clock you may have to wait a couple of days. They build them lengthways and launch them sideways and they make them so long that the stern doesn't get into port the same day that the bow does.

They have to carry two second mates on them, not one second and one third mate, but just two second mates, for there is nothing lower than a second mate. This is necessary because the scriptural emphasis to his commands can be no longer heard the full length of the ship.

They will soon have to have two whistles on them, one at each end. The one at the bow to notify the people that she's coming, and the other on the stern that she's gone.

I understand that there is a movement on foot to compel the inspectors to examine candidates as to the rules of navigation instead of having the lawyers do this in court in collision cases. This is not right because it would deprive us of some work, and it would make them a great deal of work without a corresponding increase of salary, besides they would have to learn the rules, and where would they get them?

It has been mooted that inspectors shall not have the right, when one man is accused of a violation of law, of trying the accused and fining the accuser. These are privileges dear to the inspector and he ought not to be deprived of them. I am opposed to such a reform.

Another thing. If the sailing season continues to grow in length as it has, navigation will soon go on for the whole year, and then there'll be no time during which a man's license can be taken away from him without interfering with his business, and this would hardly do, and besides the inspectors ought to suspend a man occasionally just to keep their hands in.

The inspectors are doing well enough. They get small pay. They are like a boy I once had in my office. I sent him up town and he stayed a long time and I was anxious to go out as soon as he returned. I said to him when he got back, "You were gone a long time, it seems to me." "Well," he said, I got back as soon as I could for the pay I'm getting."

There has been a marked growth in the ability of the admiralty lawyers. With the aid of a good lawyer, a master can sail a ship through an admiralty court better than through a river. There was a time when the judge tried to find what the truth in a case was, but nowadays both sides tell the truth and the court simply names the winner, that's why it takes so much longer now to decide a case than it used to.

Mr. Parsons, one of the ablest American jurists, says that every man on board ship, except the master, is a sailor, and, after nearly twenty-five years' experience in the trial of cases, I think, in some instances at least, Mr. Parsons is right.

The captain's position on board should be like that which the Irishman tells about:

An Irishman, considerably disfigured, was met by another who said, "What's happened to ye, me man? How kim ye by the head ye have on ye?" "'Twas a fight. I went to Hinnessy's weddin'. I ushed to know her that he married and coorted her before he did, and before I went I braced up on a drink or two. When I got theyre and was lukin' around I saw a fellow that was dressed up to kill and puttin' on ayres to beat the captain of a Detroit shtameboat, when I says to him, 'who the hell are you?' 'I'm the best man,' sesh 'e, an' 'e was!'"

I am in favor of discipline on board, and in my own quiet

way am doing a great deal toward keeping up obedience and order. If you will pardon me I will give you an instance of the good we lawyers can do.

A tall young Swede came to me one day and said: "I gut a fallu, by name Pete Yonson, he is my pordner in a lil scow en he es de mayt an he tank he can du ole he like, en wot I vont es, ef I bin de kepton wat kin he du?" "In what way?"

"Wall, we gut a lode 'so dos,' ve git lode 'so dos' en Gran rever an tek it tu Soud Shecaago, an he groul en groul ole a tam, and fen fole, en de oder day I tole him tek in a yeb, en he say 'go to hal,' an he vant to fight, now vot I ken du wed him ven he ess moi pordner."

"Well, is he a bigger man than you are?" "No, he ess not a beg men." "How many of the crew have you?" "Ve got von men, he ess my broder." "Well, you and the crew can handle him, can't you?" "Yas, I tank so." "Well, if he doesn't obey, put him off." "Wall, can I du dat wen he ess my pordner?" "Why, yes." "Well, ven I can du it I will du it an my brodder an boor well halp me. I well tell dot men I vell trow him over boor an he can go tu hal an fin out wa' he tank."

EASTERN FREIGHT REPORT.

Messrs. Funch, Edye & Co. stated that since their last report, freights from this continent have taken a turn for the better, as the inquiry for tonnage, especially such affording early shipment, has perceptibly improved, being attributed, as concerns grain, to a falling off in the tenders from the River Plate and the Black Sea. Vessels to Cork f. o. continue in some request at 3s. 4½d. @ 3s. 6d., 3s. 4½d. for early February, 3s. 3d. for later shipment, and large boats for picked ports at 2s. 10½d. @ 3s. for January, with the privilege of some general cargo at 1½d. additional; this privilege, of late, owners appear less inclined to grant. There is but little unsatisfied inquiry for prompt cotton boats from the Gulf or the Atlantic ports; for February and later months the demand is very light. There is no change in the conditions underlying case oil and timber freights from the Gulf as last presented. Shippers are in the market for such tonnage, but postponing action in expectation of freer offerings and a slightly lower range of freight.

Our market for sailing vessels shows no appreciable change, continuing to rule firm, with a fair demand in most directions. Business in petroleum tonnage for Europe forms the only exception, as we cannot report a single fixture in this line for the entire week. The requirements of the Australian trades for the next few months appear to be pretty well provided for, a number of vessels having been taken as far ahead as April, so that charterers will entertain no further offers for that month, though there is still a chance of placing a few vessels for February, March loading. Case oil vessels for the far east are still wanted, and rates for such continue firm, even though the tonnage be quite remote. The inquiry for timber and lumber vessels remains fair, but, for want of tonnage offering, only little business has been effected.

BIDS ON HARBOR WORK.

The proposals received at Duluth, Minn., for building substructure for the south pier of the ship canal entrance to the harbor at Duluth, and opened January 15, by Major Clinton B. Sears, Corps of Engineers, U. S. A., were found as follows (total amounts only being given, although thirteen bids on different phases of the work had to be submitted): Porter Bros., Duluth, \$217,009.50; James L. Lipsett & Robert Craig, Sault Ste Marie, \$201,840; Heldmaier & New, Chicago, \$234,235; Adolph Green, Green Bay, \$207,057; The L. P. & J. A. Smith, Cleveland, \$186,590; P. McDonnell, Duluth, \$184,540; N. Frederic Hugo & Frank P. Tims, Duluth, \$179,972; Carlin, Stickney & Cram, Detroit, \$206,395; McMullen & Morris, St. Paul, \$184,300; James B. Donnelly, Buffalo, \$181,820; *King & Steele, Duluth, \$170,779; Frank Campbell, Duluth, \$212,630; The Barnet & Record Co., Minneapolis, \$183,721; Norris & Fitzgerald, Duluth, \$206,710; A. F. Chapman & Co., Buffalo, \$340,835.

*The firm of King & Steele were the lowest bidders in the aggregate, or taking the mean of all the thirteen bids contained in the proposals.

CAPT. G. D. S. TRASK has resigned his position as governor of the Sailors' Snug Harbor at New York. His resignation was the result of the recent investigation into his management of that institution. Many complaints of his arbitrary treatment of the inmates have been made time and again, and as the recent charges were proven to the satisfaction of the judges to whom the cases were referred to, no other outcome could be looked for.

GRAPHIC METHOD FOR FINDING THE MAGNETIC CO-EFFICIENTS FROM THE OBSERVED DEVIATIONS.

(COMMUNICATED.)

Second paper on deviation.

Although the English Admiralty Manual for the deviations of the compass is an elaborate composition, it fails to supply the navigator with practical graphic methods for finding the magnetic co-efficients from the observed deviations, methods within the reach of persons of limited mathematical knowledge. To anticipate the changes in the deviation on a change of place and to reconstruct the deviation table, a knowledge of the magnetic co-efficients is of prime importance. The co-efficients, five in number, A, B, C, D, and E, are obtained from observations of the deviation on eight opposite compass points, the principal points to be given the preference in using the following graphic method:

By taking 1, with regard to sign, half the sum and half the difference of the deviations on opposite courses, commencing with north over east, the quadrantal and semi-circular deviation by observation is found for the eastern semi-circle, which serves as a basis for the construction of diagram A and diagram B, the details of which have been explained in last issue of this paper.

a, TO FIND THE CO-EFFICIENTS OF THE QUADRANTAL DEVIATION.

Draw a north-south line, and at right angles to it an east-west line. From the intersection point O lay off on the N—S line to the north of O, as unity for the construction 1 (from 6 to 12 inches); the point thus found is the center of deviation. Through this center draw lines southward forming with the N—S line the angles of the observed quadrantal deviation, east deviation to the right, west deviation to the left, and mark these lines with the courses to which they belong. The distances of the intersection points of these lines with the E—W line from O are positive when east of N—S line, and negative when west of it; their algebraical sum divided by 4 is the value of the abscissa A of the generating circle. From O lay off on the E—W line the value of A, to the east from O if positive, and to the west from it if negative. The point thus found is the center of the generating circle. Take the distance on the E—W line between the intersection points for N—E and S—E and lay it off on the N—S line from O to the north if the intersection point for N—E is to the right of the intersection point for S—E and to the south if to left of it. Then take the distance between the intersection points for N and E and lay it off on the E—W line from O to the east if the intersection point for N is to the right of the intersection point for E, and to the west if to the left of it. Complete the rectangle indicated by the points on the N—S and E—W line thus found and draw a diagonal line to the opposite corner from O. Half the length of this line represents the radius of the generating circle, and the direction of the diagonal the starboard angle θ of the magnetic force from horizontal induction called G. A line parallel to it through the center of the circle indicates the north point at the circumference, opposite which is always located the east point and 90 degrees from each the points for N—E and S—E. The straight lines called c from the center of deviation to the points marked at the circumference of the circle are used in finding the co-efficients of the semi-circular deviation.

Half the sides of the rectangle mentioned above represent the co-efficients D and E respectively, the values of which are very nearly exact.

The differences between the observed quadrantal deviation and the angles represented by the respective c lines in the diagram are the errors in the observations. Attention must be paid to the point N—E at the circumference of the generating circle being always to the right from the point marked N as seen from the center; if it be found to the left there is an error in the construction and the North point has not been located right. Also, should it be remembered, that there is no such thing as a negative G. If it should appear, the starboard angle has to be increased 180 degrees and G to be taken positive. The sign of D is no indication of the sign of G as might be inferred from passages in the Admiralty Manual frequently substituting D for G.

Furthermore, should it be understood, that the quadrantal deviation is not confined to quadrants; the so-called quadrantal deviation is rather a deviation in a semi-circle, repeating itself in the eastern and western semi-circle on opposite courses; but not in the four quadrants by alternately changing its sign, as is commonly assumed and taught. A glance at diagram A, drawn according to previous instructions, explains this matter fully.

b, TO FIND THE CO-EFFICIENTS OF THE SEMI-CIRCULAR DEVIATION.

Draw a N—S line and make any point of it the center of deviation. Through this center draw lines to the north forming with the N—S line the angles of the observed semicircular deviation. East deviation to the right, west deviation to the left of the N—S line. Mark each line with the course to which it belongs, and lay off on each from the center of deviation the respective c previously found by diagram A; and from points thus obtained let fall perpendiculars on the N—S line. Construct a right angled triangle in which the perpendiculars for the courses N. and E. are the sides forming the right angle. In this triangle the angle opposite the perpendicular for north may be called the angle of construction. Similarly, from the perpendiculars pertaining to the courses N—E and S—E an angle opposite the perpendiculars for N—E is found from which 45 degrees subtracted, furnishes also the angle of construction. The arithmetical mean of the true

values of the angles thus obtained is the exact value by means of which the starboard angle of the force F is found, according to the following schedule, by the signs of the semi-circular deviation on N. and E.

4. Quadrant	1. Quadrant
N minus	N plus
E plus	E plus
N minus	N plus
E minus	E minus
3. Quadrant	2. Quadrant

Therefore, the starboard angle, In the first quadrant equals the angle of construction. In the second quadrant equals 180 degrees minus the angle of construction. In the third quadrant equals 180 degrees plus the angle of construction. In the fourth quadrant equals 360 degrees minus the angle of construction.

To find the force F take any point on the N—S line north of the center of deviation as center of a circle of any convenient radius and describe the circle. Draw a radius making an angle with the N—S line equal to the starboard angle θ , previously found, and mark the point of intersection with the circumference north, and from this point out divide the circle into the 32 points of the compass. Mark the courses NE., E and SE. and indicate them by lines drawn through the center of the circle, and draw lines parallel to them through the northern extremities of the corresponding c's. In each triangle thus formed by the N—S line, the c and the parallel course line, the latter represents the force F; and the arithmetical mean of all the F's is the exact value of the force F producing semi-circular deviation. By constructing a new diagram B with the exact values of θ , F, and the c's from diagram A the exact values of the semi-circular deviation is found for every course. The difference between the observed values and the exact values are the errors in the observations.

With the angle of construction and the force F known, B and C are easily found by completing with the known quantities a right-angled triangle. B and C are also obtained from the two triangles used to find the angle of construction. In the first triangle the sides forming the right angle represent B and C. In the second triangle the line at 45 degrees represents B minus C, and a line parallel to it through the other corner of the triangle as hypotenuse represents B plus C from which B and C are obtained. By taking the mean of the two values of B and C thus found a more exact value of each is obtained. B has always the sign of the semi-circular deviation on east; C of the semi-circular deviation on north.

From the errors in the observations mentioned before, the most probable values of the deviation and the magnetic constants are found by the method of least squares to be explained in another article.

JOHN MAURICE.

Chicago, Jan. 25, 1898.

VISIBLE SUPPLY OF GRAIN

As compiled for The Marine Record, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Buffalo	1,342,000	2,860,000	142,000	50,000	561,000
Chicago	9,979,000	15,464,000	1,273,000	618,000	691,000
Detroit	107,000	64,000	1,000	28,000	11,000
Duluth and Superior	2,114,000	1,898,000	1,598,000	1,126,000	542,000
Milwaukee	132,000	123,000	88,000	25,000	30,000
Montreal	102,000	62,000	544,000	32,000	27,000
Oswego	6,000	34,000	.....	.....	40,000
Toledo	246,000	760,000	392,000	42,000	.....
Toronto	51,000	.....	14,000	.....	22,000
On Canal .....	.....	.....	46,000	.....	.....
On Mississippi .....	.....	532,000	.....	65,000	.....
Grand Total	37,153,000	41,789,000	14,534,000	4,002,000	3,161,000
Corresponding Date, 1897	51,295,000	21,718,000	13,153,000	3,675,000	3,602,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific slope.

THE Marine Engineers' Beneficial Association No. 4, of Chicago, will hold their twenty-third annual reception and ball in Medinah Temple, Fifth avenue and Jackson street, Chicago, on Wednesday evening, Feb. 2. The following engineers are named as the committee on arrangements: Geo. A. Grubb, chairman; Jas. T. Kelly, Wm. Reef, D. W. Wise, Thomas F. Dowd, James Coughy, Geo. Fogg, J. Collins, W. H. Grubb, Jos. Mallow, John Callan and Jas. Donnelly. The thanks of the RECORD are due to No. 4 for the courtesy of an invitation to attend their always excellent and enjoyable annual re-union, and the RECORD man will do himself the honor of being present so that the members of No. 4 can at least say with the immortal Burns:

"If there's a rent in a' your coats,
I ken ye'll tent it,
A chieftain amang ye takin' notes
And feth he'll prent it."

TREASURY DECISIONS RELATING TO VESSELS

REVENUE CUTTER SERVICE.

Officers commanding revenue vessels to proceed without further orders to relief of vessels in distress.

TREASURY DEPARTMENT, Jan. 18, 1898.

To commanding officers of revenue vessels:

From and after the receipt of this order you will, upon learning of disasters to vessels, whether within or without the cruising limits of your command, proceed at once and without further orders to the relief of such vessels, whether stranded or otherwise in distress. Any information locating definitely such disasters will be regarded as sufficient to demand aid from your command.

Upon such occasions you will report your departure in aid, by wire, and submit a detailed report of your operations by mail upon your return to port.

Respectfully yours,

W. B. HOWELL, Assist. Sec.

Amending regulations of the Life-Saving Service relating to benefits of section 7 and 8, act of May 4, 1882.

TREASURY DEPARTMENT, }
WASHINGTON, D. C., January 12, 1898. }

Paragraph 189, 190 and 191 of the Revised Regulations, Life-Saving Service, 1884, are hereby amended to read as follows:

189. Whenever any keeper or member of a crew becomes entitled to the benefit of the provisions of section 7 of the act of May 4, 1882, he should forward to the General Superintendent an application for such benefit, reciting explicitly the manner in which his disability was incurred, the date and all the circumstances connected therewith. This statement should be sworn to and accompanied with the affidavits of two or more witnesses, preferably members of the same crew with the claimant, who are personally knowing to the facts, setting forth the time when and the circumstances under which the injury was received or the disease contracted and all information pertinent thereto, together with a certificate from a medical officer of the Marine-Hospital service, if one be accessible, if not, from a practicing physician in good standing, describing the disability and certifying whether or not the applicant is so disabled as to unfit him for the performance of duty in the life-saving service, and whether in his opinion such disability is the result of the injury or the disease described. * * * When the foregoing application and evidence, so far as obtainable, have been received by the General Superintendent, he will refer the papers to the superintendent of the district in which the station to which the disabled keeper or surfman belongs is situated, who will endorse thereon any pertinent information he may have relating to the case, and forward the papers to the resident assistant inspector, if there be one, for similar endorsement. The papers will then be returned to the General Superintendent for reference to the Surgeon General of the Marine-Hospital service for his opinion as to whether the medical evidence of disability should be considered sufficient. Upon the return of the papers and when, in the opinion of the General Superintendent, all the requisite evidence obtainable has been secured, that officer will forward the papers to the Auditor for the Treasury Department for settlement, accompanied by any information he may have calculated to aid in the proper settlement of the claim.

190. Whenever a disabled keeper or a member of a crew is continued upon the rolls of the service under the provisions of section 7 of the act of May 4, 1882, he will forward to the Auditor of the Treasury Department on the last day of each month during the period for which he claims the benefit of the act the certificate of a medical officer of the Marine-Hospital service, if one be accessible—if not, of a physician in good standing—stating his exact physical condition, and how long he is likely to continue unfit for duty. Such disabled keeper or surfman will return to duty at the station if it be the active season, as soon as he has sufficiently recovered, and will transmit to the General Superintendent, through the district superintendent, a certificate from a medical officer of the Marine-Hospital service, or a physician in good standing, that he was not able to return sooner, which certificate the General Superintendent will forward to the Auditor of the Treasury Department.

191. Upon the death of any member of a crew of a life-saving station, by reason of perilous service, or any wound or injury received or disease contracted in the life-saving service in the line of duty, the keeper of the station to which such member belonged will forthwith notify the General Superintendent of the date, cause, manner, and all the circumstances of the event so far as within his knowledge, and will also state whether he left a wife and children, and how many of the latter under sixteen years of age. In the case of the death of a keeper the acting keeper will supply the above information. * * *

S. I. KIMBALL,

General Superintendent.

Approved: L. J. GAGE, Secretary of the Treasury.

THE Senate Committee on Naval Affairs has reported favorably a bill appropriating \$260,000 for the construction of a war vessel to replace the old steamship Michigan on the Great Lakes. From the fact that a communication from the Secretary of the Navy strongly favoring the measure accompanied the committee's report, it seems probable that a vessel, which in case of an emergency might be of some actual service, will soon be built for cruising on our inland waters.



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CLEVELAND, O., JANUARY 27, 1898.

THE fishing industry of the lakes furnishes thousands of people with a high class nutritious article of food at a minimum cost. From this standpoint alone, every legislative safeguard and regulation should be carried out to the letter so that no decrease in the catch might eventuate in the future.

AT the annual convention of the Marine Engineers' Beneficial Association, held in Washington, last week, it was the sense of the meeting that tow barges or consorts exceeding 2,000 tons should carry a licensed engineer. It was also thought advisable to petition for an increase of 20 per cent. on ruling lake wages, to endeavor to prevent any discrimination in wages and to protest against engineer's salaries being given to the press for publication, also that members should sail with members only, and that a memorial should be presented to the Civil Service Commission requiring men holding licenses to be placed on the civil service eligible list for government positions without further examination.

ANOTHER miniature tidal wave visited Sheboygan, Wis., Monday last, making the third of the season. Sheboygan people say that it is on account of the unprotected state of the harbor, but of course that is not the cause at all, yet they do see a part of the effect. It would now be in order for Sheboygan to protect itself by having no harbor at all, then the tidal wave might possibly pick out some other poorly protected west shore port and make up its mind for a rush to destroy what obstruction was left to dispute its path. It is too thin to argue that the lack of breakwaters generates tidal waves. At the same time it might be well for Sheboygan people to ascertain why repeated attacks of old Father Michigan should be always directed to that port.

AND now a divine eminent desires to put a stop to the ceremony of christening a vessel. Ecclesiasticism run riot, calls it blasphemy forsooth. Before standing any further on that tack, the venerable stickler ought to drink a pint of Stockholm tar, eat a bundle of rope yarns and then haul out to leeward on a dark night, with a stocking round his neck, perched on a topsail yard off Cape Horn. Everything should be done decently, and in order, as the Wisconsin bishop will surely allow, and what could be more shipshape and Bristol fashion, and according to Cocker, than christening a vessel before she is placed in the hands of the Great Keeper to guide and guard her as she travels around the moon, the life, the love, the home of immortal souls. We would only stipulate that the wine or liquor used, should be of the best, signifying purity; the broken bottle, proof of holiness; holy enough too, after it is whacked over her forefoot, and the ruby stream trickling down her stem to represent the liquid element which she would live to conquer, even if she had to stoop sometimes to do it.

SUPERVISING INSPECTORS' MEETING.

Now that the Board of Supervising Inspectors of Steamboats are in annual session assembled at Washington, we look for something more to be done than just passing upon the merits or demerits of patents designed especially for the superfluous equipment of steamers. The board should represent, and be composed of, the highest maritime talent which the United States can produce, but the unwelcome query pushes itself to the front, has it, is it, or will it ever be, that which it ought to be? What has it done in the past? To what end will its astute deliberations tend in the present sessions, and how will it act in the future? The Supervising Inspector General of Steamboats is of the opinion that a third of the members ought to be lopped off the official body and instead of nine, convene with six; given an additional assistant supervising inspector general though, so as to rumble over the knotty, if not wicked technical problems that come before the departmental chief during the course of the year. If in the multitude of counsel there is wisdom, as someone has said, the head and fount of the steamboat inspection service evidently desires to give the retort defiant to the assertion by seeking to lessen the number of his counsellors. Well, in this he may probably be as right as the other fellow was who wanted, perhaps, too many advisers. An equally important branch of the Treasury Department is that of the office of Commissioner of Navigation, yet there are no satellites revolving annually around the head of that bureau, and the office maintains itself with a fixity minus friction, if we except the periodical administration overthrow, which by the way has not been evidenced in the department of the steamboat inspection service. It is said, "by their works shall ye know them." We would like to know the members of the present Board of Supervising Inspectors of Steamboats better than we do, and shall await the result of their annual meeting, while in solemn technical conclave assembled they deliberate on how to ameliorate the present condition of masters, engineers, the various grades of pilots and assistant engineers, as well as that of shipowners and the builders of hulls, engines and boilers, all of which, no doubt, will be duly accomplished as in former sessions of this august body of technical experts in the field maritime. It is to be hoped, at least, that some measures beneficial to the lake marine, (which is the backbone of the United States mercantile navy) will be promulgated, and in such a well advised manner that revisions or amendments of same will not be in order on the first kick that they may receive. In this category might be placed a national method for the examination of licensed officers, sail and steam, as well as other subjects which the MARINE RECORD has suggested and ventilated about fifty times during the past year.

HYDROGRAPHY.

Our leading article last week treated succinctly of hydrography, its inception and the science as at present maintained by the general government through the officers of the U. S. Navy.

A New York daily newspaper, this week, questions the outlay necessary to the up-keep of this valuable service and writes in a somewhat derogatory manner of the ultimate good attained by the staff or detail placed in this branch of the national service.

The RECORD is fully in accord with the assistance rendered by the Federal government in enlarging the scope of the hydrographic work of the United States as evidenced by our editorial of the 20th inst., and would further say that a still more liberal policy ought to be pursued in this direction, as the benefits derived therefrom are for the best interests of general commerce.

In support of the foregoing we are pleased to republish from the Liverpool Journal of Commerce the following panegyric relative to the hydrographic work of this country:

One of the Ducal line, the Duke of Devonshire, struck an uncharted rock while in the charge of a skillful pilot navigating her between the Brisbane Rock and Prince of Wales Island. The Admiralty chart showed plenty of water just there. Blame was not attributed to any one by the court, which suggested, however, that a further examination of the locality is desirable. Space is wanting to describe in detail the many dangers either localized or proved to be non-existent by ships of her Majesty's surveying service. Curiously enough the United States authorities have not so far followed the practice in vogue over here of having a special surveying fleet officered in part by highly qualified nautical surveyors. Nevertheless work of a high order of merit in this line is carried out by officers of the United States warships when on foreign stations. Last April Capt. C. D. Sigsbee, U. S. N., who had served for some time as hydrographer at Washington, was appointed to command a warship, and Capt. J. E. Craig, U. S. N., became his successor

in office. During the year 63 charts were finished for permanent issue and nine for daily use, covering the Great Lakes and the Republics of Brazil, Chili, Honduras, Guatemala, and Venezuela. At the same time progress was made with other parts of the world. The United States warships Marion, Bennington, Thetis, and Michigan are specially mentioned by Captain Craig in his valuable report as having contributed towards this absolutely necessary nautical surveying. During the year sailing directions and notices to mariners received every attention both by the British and the United States hydrographer. About a dozen sailing directions and supplements thereto were issued during the year dealing with the Gulf of Mexico, the Great Lakes, South America, Africa and elsewhere. Lists of lights of the world were also brought up to date. The monthly pilot charts of the North Atlantic and the North Pacific, together with the weekly hydrographic bulletins, have been published regularly, and retain their unique position as concisely accurate aids to safe navigation. At the close of the financial year there was 1,847 observers of various nationalities zealously co-operating with the United States Hydrographic Office in perfecting these admirable charts, as against 1,629 on the same date of 1896. It is gratifying to learn that no fewer than 1,747 of this large band of co-operators were belonging to the world's ocean cargo carriers, principally British shipmasters and officers, by reason of the enormous preponderance of British tonnage. Articles of interest to navigators have appeared on several of the pilot charts in addition to the regular monthly items. The routes between the east coast of Africa and Australia; from United States ports to the equator, en route for Australia; and from Australia to the west coast of the United States, were all ably treated, so that he who runs may read. Ice on the banks of Newfoundland, currents in the Strait of Belle Isle, the passage of the Strait of Lemaire, North Atlantic gales, and the international system of cloud nomenclature also received careful attention. Navigators who have the 1897 series of pilot charts and those of previous years will find them a perfect *vade mecum* with respect to marine meteorology. It is sometimes asserted that daily synoptic charts of North Atlantic weather are not drawn up regularly. As a matter of fact, the United States hydrographic carry out this good work both for the Atlantic and the Pacific north of the equator. Shipmasters will always find a hearty welcome at any of the branch offices at Boston, New York, Philadelphia, Baltimore, Norfolk, Savannah, New Orleans, San Francisco, Portland or Port Townsend. There are also several branch offices now on the Great Lakes. Over one and a half million of notices to mariners and 40,000 pilot charts were distributed during the year; nearly 10,000 vessels were visited, and 18,000 barometers of ships compared with shore standards. Much other work was done during the year, which want of space forbids more than mention. Both the British and the United States Hydrographic Offices are to be congratulated on the great amount of excellent hydrographic work done in 1897 with very scanty means at command.

WITH the organization of masters and pilots, styled Harbors, the Shipmasters' Association, formerly known as the Excelsior Marine Benevolent Association, and to which only masters in steam are eligible as members, the deck departments of lake vessels seem to have joined hands for future mutual benefits. The engineers' order known as the M. E. B. A., or Marine Engineers' Beneficial Association, shows a consolidation of nearly ten thousand members, the majority of the branches being at lake ports. Each of these bodies have held their annual sessions during the week and brought to light preambles and resolutions for the betterment of their class and condition though the fruition thereof, that is, the resolutions, has yet to be witnessed.

ACCORDING to a recent ruling of the Treasury Department, officers commanding revenue vessels are to proceed without further orders to the relief of any vessel stranded or otherwise in distress. Any information locating such disasters is to be considered sufficient to demand immediate aid. Now, this may work all right on the Atlantic Gulf or Pacific coasts, but if the revenue cutters on the lakes are to go prowling around taking the bread out of the mouths of the towing and wrecking companies it will not be considered a very equitable proceeding. The order which is contained in the column of "Treasury Decisions Relating to Vessels" in our current issue is mandatory and leaves little or no discretion to the officers in charge of the cutters. Paternalism in governments as in domesticity may be carried a trifle too far sometimes. A vessel in distress, like a baby in trouble, demands the immediate attention of any assistance in the vicinity—gratuitous, voluntary or purchased.

SOME little while ago it was mooted that waves of criminality swept over the country and that if the original cause could only be discovered the effect might be rendered null, void, defunct. Scientists, or at least those who are particularly gifted over and above their fellow men, might get after the cause of strikes, as their effects are only too palpable.

The shipping industry in the United Kingdom has been paralyzed for some time past through the Associated Society of Engineers getting at loggerheads with their employers. We now have a miniature wave of strike feeling and discontent waltzing around two of the largest and busiest lake shipyards, this too, chiefly among the iron workers. It is to be hoped that the unrest will not sweep over the United States industry as it has done in the United Kingdom, throwing thousands of men out of employment and clogging the wheels of progress at a time when all efforts should be directed towards forwarding our best industrial and commercial interests.

NEW SHIPBUILDING CONTRACTS.

The Globe Iron Works Co., Cleveland, secured a contract this week for the construction of a steel steamer having the following principal dimensions: 430 feet over all, 410 feet keel, 50 feet beam, and 28 feet molded depth. The engines are to be quadruple expansion and boilers of the Scotch type, fitted with the Ellis & Eaves draft and to be allowed 230 pounds pressure. Capt. John Mitchell, Cleveland, is to be the managing owner of the new craft, and she is estimated to carry 5,400 tons on a draft of seventeen feet. The builder's figures place her value at \$230,000, with prompt delivery in August.

The Craig Ship Building Co., Toledo, has contracted with the North American Transportation Co. to build a steel sea-going tug, 105 feet long, 23 feet beam and 9 feet deep. She will be fitted with two compound condensing engines; diameter of cylinders, 12 and 24 by 16 inches stroke, to drive twin screws, boilers tested for 150 pounds steam. The tug will be used in the Bering Sea trade and will have a speed of twelve miles per hour, and so fitted for water ballast that her draft can be regulated from 7 feet to 3½ feet.

Among new boats being built by William Hingston & Son, Buffalo, is a tug for John F. Owens, of the Owens & Beck line. A small tug is being built for David Baird, of Camden, N. J. She is 54 feet in length, and when completed will go to Mobile, Ala. Work on this tug is nearly completed, finishing touches to the pilot house and painting being all that is now required. They are also building a sand-pump dredger 135 feet in length and 30 feet beam. She will have two engines and twin screws. The engines are of the high-pressure type 14 by 16 inches. The boiler will be 7½ by 13 feet.

An elevator dredge for the Buffalo Dredging Co. is also in process of construction. The vessel will be about 85 feet in length and 32 feet beam. The tugs W. H. Stevenson and Ella B. are being entirely rebuilt, and the tug Adam Homer will have a new deck and deck-house.

At the same yard are to be built two new dredges for Hingston & Woods, the contractors. The larger one, work on which has not yet been started farther than the perfecting of plans, will be 135 by 44 feet. This dredge will be capable of digging in 20 feet of water and will have an eight-yard dipper, which is expected to swing in 30 seconds. Engines are to be double high-pressure, 18 by 24 inches, and there will be two 12-foot hoisting gears of 12-inch face. The dredge will be provided with independent engines for swinging, backing, lifting anchors, etc. Her hull will be built as strongly as such a boat can be made, and will be lighted by electricity. Two 150-horse-power boilers will furnish steam.

The other dredge, now building, is much smaller and is for canal dredging. It will be provided with removable pontoons, to enable it to pass the locks. With the pontoons attached the dredge will measure 98 by 34 feet, with 7-foot sides. This dredge will be capable of handling from 1,500 to 2,000 yards of material daily. The cost of the large dredge will be about \$55,000. The smaller dredge will cost \$20,000.

The Jenks Ship Building Co., Port Huron, has commenced building a large modern tug, particulars of which are given in the Port Huron letter on another page of this issue.

ERIE CANAL BOAT OWNERS.

The Canalboat Owners' Association of the state of New York, has drafted two bills for the protection of the commerce of the state and of the canals, and they will be introduced in the legislature in a few days.

One of the bills appropriates \$120,000 for the purchase of four grain elevators at Buffalo by the state superintendent of public works, and provides that he may institute condemnation proceedings to take elevators that are now in use there, and which he may decide are best suited to the purpose of the state.

The second bill provides that any railroad corporation operated wholly or partly within this state which shall

charge or receive a greater sum for transporting flour, grain, meats, lumber, merchandise, oil, iron ore, coal or any other products than is charged by any other railroad for carrying from the same point of shipment to the seaboard to some port other than the port of New York, shall be declared to have abrogated its charter, which shall become the property of the state. Violation of the act is to be construed a conspiracy, and upon conviction, the person guilty of such violation may be fined from \$5,000 to \$25,000, or imprisonment from one to five years.

THE PIG IRON PRODUCTION.

The total production of pig iron in the United States for 1897, as shown by complete returns received from the manufacturers by the American Iron & Steel Association was 9,652,680 tons, an increase of 1,029,553 tons as compared with 1896. The production of basic pig iron for 1897 was 556,391 tons, distributed as follows: New York and New Jersey, 79,041 tons; Pennsylvania, 350,068 tons; Maryland, Virginia and Alabama, 97,562 tons, and Ohio, Illinois, Wisconsin and Missouri 29,720 tons.

CHRISTOPHER COLUMBUS SOLD.

The whaleback passenger steamer, Christopher Columbus, has been purchased by the Goodrich Transportation Co.

The competition which the Goodrich company had to meet in the Chicago excursion business from the whaleback was very close, and it was decided that the best thing to do was to purchase the competitor. It can not be learned what the purchase price was, as the parties refuse to talk of it. The Christopher Columbus will be continued in the Chicago excursion business, sailing under the Goodrich house flag.

A NEW GRAIN ELEVATOR FOR BUFFALO.

Plans are being made by R. Dunbar & Sons, of the Eagle Iron Works, Buffalo, for the construction of an immense steel elevator to replace the Sturges elevator, which was destroyed by fire several weeks ago.

It is expected that the plans will be ready and the contract for the work let before February 1. It is the intention of the promoters of the new elevator to rush work on it with all possible speed and to have it ready for use by July 1 of this year. A large force of men will work night and day to complete it by that time.

The Sturges elevator was owned by the Buffalo Elevating Association, of which Edward Michael is president. Almost before the ruins were cold the directors of the company made up their minds to erect a new structure.

Dunbar & Sons, who have built many of the elevators along the water front, were consulted and the plans of the directors were made known. The elevator site fronts on the Buffalo river, Blackwell canal and Peck's slip. The entire water frontage is 1,100 feet.

The new structure will be constructed almost entirely of steel. A brick wall will be built around the immense steel bins. Between 150 and 175 bins will be built, holding in the neighborhood of 1,000,000 bushels of grain. The elevator will be 250 feet long and 70 feet deep. It will be modern in every way and will be one of the most complete of its kind in the country. It has not been settled yet what kind of power will be used to run it, but the promoters think of operating it with Niagara Falls electric power.

CHRISTENING WAR VESSELS.

Miss Helen Long, daughter of Secretary of the Navy John D. Long, who christened the Japanese war vessel Kasagi at the Cramps' shipyard yesterday, consummated the ceremony by letting loose a pigeon instead of breaking the proverbial bottle of wine. Apropos to christening ships, Bishop Nicholson, of Wisconsin, has come out with a protest in the name of the Episcopal church against the practice of referring to the naming of warships as christenings. He speaks of the claims of the rival young women for the honor of naming the battleship Kentucky, and says that to refer to the baptism of a ship with wine as a christening is an act of sacrilege, for which both government and those directly concerned invite dreadful consequences. He would not be surprised, he says, to hear at no distant day that the Kentucky was at the bottom of the sea. Christening, the Bishop holds, is a term essentially of the church, and as it can have but one meaning, a coming into Christ. He declares its use in connection with a launching to be blasphemy. The verdict of all sailors would be, either that the reverend sky pilot ought to clap a stopper on his jaw tackle, or hire a guard to go around with him. A ship deserves the purest, holiest and jolliest christening of any darned thing under the sun.

FLOTSAM, JETSAM AND LAGAN.

The Toledo city council, on the plea of municipal economy, has decided not to provide adequate facilities for putting out fires. Among the protective measures required was a fire tug to cost about \$45,000, fully equipped.

The plant of the American Steel Barge Co. at West Superior has been made so complete that it is now possible to construct every part of a modern steamer, excepting the propeller wheel and engine cylinders. They are also in the field for structural iron work.

C. H. Wilcox, for several seasons chief engineer of the steamer Frank L. Vance, will serve in the same capacity on the steamer Fred Pabst the coming season. The position on the Vance vacated by Mr. Wilcox will be filled by Joseph G. Mason, who changes from the steamer P. D. Armour after having filled the position of chief engineer on that craft for four seasons.

The steamer Mary H. Boyce is again in commission on the Grand Haven route. She left Milwaukee last Saturday night with 1,000 tons of freight, including 25,000 bushels of barley. The F. & P. M. No. 3 took out 18,900 bushels of barley, and the F. & P. M. No. 4 took 25,000 bushels of oats. F. & P. M. No. 2 took out 30,000 bushels of oats. The three cargoes were for Ludington.

The firm of Harland & Wolff, Belfast, Ireland, built eleven vessels last year, their tonnage aggregating 84,240. In 1896 81,316 tons were turned out, and the same number of vessels. This is at the rate of nearly 7,000 tons of floating property each month for the past two years. The firm of Mackie & Thomson, Govan, put thirty-six vessels afloat, of 175 tons each, during the year, or at the rate of three each month.

At the annual meeting of the stockholders of the American Ship Windlass Company, held at Providence, R. I., January 10, 1898, Frank S. Manton was elected agent. At the meeting of the directors immediately following the meeting of the stockholders, Alfred Metcalf having declined a re-election as president, Frank S. Manton was elected president and George H. Remington was elected secretary and treasurer.

In speaking of the movement of Chicago business men in favor of closing the branch of Chicago river as far up as Fourteenth street, and the construction of a ship canal from that point to the lake, Representative James R. Mann says: "It may be that a new channel from the river to the lake with swing bridges across about Seventeenth street will be constructed some day, but it will be long after I have left Congress and the lower regions are frozen solid."

An effort will be made to secure an appropriation from the present congress for a fog signal at South Chicago. The increase of business at South Chicago in the past season was greater than at any other port on the lakes. Smoke as well as fog is a great hindrance to navigation in the vicinity of Chicago, and there is urgent need of this fog signal. Lighthouse officials will favor it, but it will be hard work to secure extra appropriations of any kind in Washington this winter.

In the United States Court at Milwaukee, a jury awarded damages in the sum of \$3,562.50 to Patrick Shea for injuries sustained on the steamer Osceola a year ago. Shea, who was employed as a deckhand on the Osceola, had his head, shoulder and knee severely injured by a tackle block which was being used to lift a gangway shutter while the steamer was approaching Milwaukee harbor during heavy weather. He sued for \$10,000. The injury was proved, and it remained for the jury merely to assess the damages.

Two sailing vessels that have been rivals for some time left the port of New York together last week. The captains of the two ships have made wagers as to the time of their arrival at their respective ports. The Arian, commanded by Captain Dickinson, is bound for San Francisco, and the Dirego, Captain Goodwin, sailed for Shanghai. The distance which each is to travel is nearly the same, and the vessels will take the same course until they reach a high Southern latitude. The loading of both vessels was finished at the same time. The Dirego crossed the bar five minutes ahead of the Arian.

Next to the ecclesiastical courts, those that practice in the admiralty courts are supposed to be the most grave and circumspect of all who seek to point the way of justice, gain a verdict and get a fee, no matter whether they wrangle over contracts or wrestle with torts. It is a mistaken idea. With an admiralty lawyer as toastmaster (Harvey D. Goulder, Esq., Cleveland) and another to make the speech of the evening (C. E. Kramer, Esq., Chicago), there was as much keen wit and fun as there were good things to eat and to "open the channel," at the lake carriers' banquet last week in Detroit.—Ex.

Bishop Nicholson, of Wisconsin, denounces the proposed christening of a battleship with whisky as blasphemous, and would not be surprised to find that big battleship, at no distant day, having started out with a curse upon it, down at the bottom of the ocean. It is evident that the good bishop has no Kentucky blood in his veins. In any case his contention is absurd. To call a ceremony a christening does not make it one, in an ecclesiastical sense, and breaking a bottle over the bow of a vessel is in no sense a parody of Christian customs. Indeed, it is a relic from the days of heathenism.—Army and Navy Journal.

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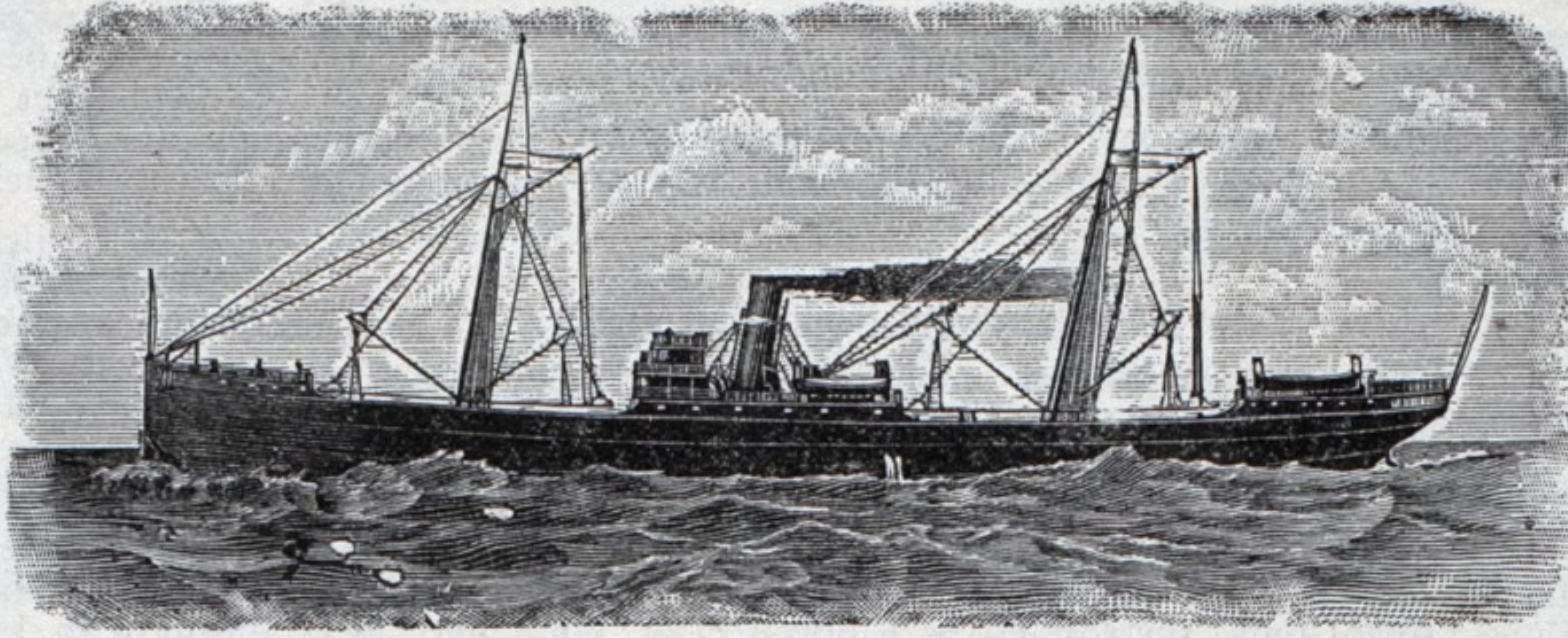
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SHIPBUILDING IN 1897.

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

During 1897, exclusive of warships, 591 vessels of 952,486 tons gross (viz., 545 steamers of 924,382 tons and 46 sailing vessels of 28,104 tons) have been launched in the United Kingdom. The warships launched at both government and private yards amount to 48 of 95,465 tons displacement. The total output of the United Kingdom for the year has, therefore, been 639 vessels of 1,047,951 tons. In these notes, war ships are excluded from consideration except where they are specially mentioned.

The output for the year in the United Kingdom is less than that of 1896 by 207,000 tons, but is about equal to that of 1895. The decrease occurs mainly in steam tonnage. The construction of sailing vessels, which has been rapidly falling off since 1892, has this year reached a lower point than any of which Lloyd's Register has previous record. In 1892 sailing tonnage formed 24 per cent. of the output; in 1897 it forms only 3 per cent. of a considerably smaller total.

The warship tonnage launched in 1897 likewise shows a very considerable decrease (68,000 tons) from the figures for 1896. The tonnage launched for the British navy is less by 51,000 tons than was the case last year.

In recent annual statements of this kind, the output of the year 1889 has been assumed to be nearly indicative of the maximum productive capacity of the shipbuilding yards of the United Kingdom. In that year 595 steamers of 1,083,793 tons, and 95 sailing vessels of 125,568 tons (total 690 vessels of 1,209,361 tons) were launched. It will be seen that these figures exceed those for 1897 by over 17 per cent. on the steam tonnage, and by nearly 27 per cent. on the total tonnage. On the other hand, the war tonnage launched in the country during 1897 exceeded that launched during 1889 by over 47,000 tons. It may be said that, on the basis of tonnage launched, and taking the figures for 1889 as a standard, the shipbuilding facilities of the country have been utilized in 1897 to the extent of five-sixths.

As regards the material employed for the construction of the vessels included in the United Kingdom returns for 1897, it is found that, of the steam tonnage, 98.8 per cent. has been built of steel and 1.1 per cent. of iron. The iron steam tonnage comprises no vessel of more than 196 tons. Of the sailing tonnage, 95.5 per cent. has been built of steel, and 4.5 per cent. of wood.

Of the total output, 688,534 steam tons and 27,592 sailing tons, or 716,126 tons in all (rather over 75 per cent.) belong to ports in the United Kingdom. In this connection, it may be noted that the losses, etc., of United Kingdom vessels during twelve months are shown by Lloyd's Register Wreck Returns to average 272,000 tons (187,000 steam, 85,000 sail). Sales to foreign and colonial owners for the twelve months ended November, 1897, reach the large total of 465,000 tons (359,000 steam, 106,000 sail). On the other hand, purchases from foreign and colonial owners during the same

period amounted to 68,400 tons (63,600 steam, 4,800 sail). The sailing tonnage of the United Kingdom would thus appear to have decreased by about 158,000 tons, while the steam tonnage has increased by 206,000 tons. The net increase of United Kingdom tonnage during 1897 is therefore about 48,000 tons. This figure falls below the similar estimate for 1896 by 169,000 tons, below that for 1895 by 81,000 tons, and below that for 1894 by no less than 381,000 tons.

About 25 per cent. of the total output has been built to the order of foreign and colonial shipowners in 1897, as compared with 30 per cent. in 1896 and 20 per cent. in 1897, as compared with 30 per cent. in 1896 and 20 per cent. in 1895. Japan has this year provided the largest amount of work for British shipbuilders, 14 vessels of 59,425 tons (over 6 per cent. of the total output) having been built for that country. Germany follows with 8 vessels of 30,507 tons (over 3 per cent.). Next come the Colonies with 23,000 tons (2.4 per cent.); Holland with 18,800 tons; Russia with 16,000 tons, and Norway with 14,200 tons. Denmark and France have each taken between 13,000 and 14,000 tons; and Spain has taken 12,600 tons.

The largest steamers which have been launched in the United Kingdom during the year are the following:

	Tons gross.		Tons gross.
Cymric.....	12,340	Rotterdam.....	8,200
Brasilia.....	11,100	Monmouth.....	7,950
Briton.....	10,248	Arabia.....	7,920
Delphic.....	8,273	Egypt.....	7,912

The largest sailing vessels are the following:

	Tons gross.
Nivelle.....	2,430
Hougomont.....	2,428

Of the principal shipbuilding districts of the country, Glasgow takes the lead with an output of 186,178 tons. Then follow in order Sunderland (174,496 tons), Newcastle (169,585 tons), Belfast (106,605 tons), Greenock (103,073 tons), Middlesbrough (88,827 tons), and Hartlepool, (65,686 tons).

During the year under review, six steamers have been launched of the trunk-deck type which was introduced in 1896—all having been built under the supervision of Lloyd's Register. The output during the year includes, in addition, 147 steam trawlers and other fishing vessels; 34 dredgers, barges, etc.; 32 yachts; 17 tugs, and other vessels designed for special service.

Of the vessels launched in the United Kingdom, 484 of 760,133 tons have been built under the society's inspection with a view to classification in Lloyd's Register Book.

As regards the movements of the shipbuilding industry during the course of 1897, Lloyd's Register returns show that, irrespective of war ships, the total tonnage under construction in the United Kingdom on the 31st December, 1897, exceeded by about 229,000 tons, or nearly 30 per cent. that under construction twelve months previously. The increase is entirely in steam tonnage, the sailing tonnage now in pro-

gress standing at the unprecedentedly low total of 4,127 tons. At the close of 1896, 784,711 tons (755,975 steam, 28,736 sail), were being built. During the first three quarters of 1897, the figures gradually increased until at the end of September 884,000 tons were reported. A very large increase upon these figures is indicated by the latest returns. These show that no less than 1,013,319 tons (1,009,192 steam, 4,127 sail), are at present under construction in the United Kingdom. There can be little doubt that so large an amount of tonnage has never before been in hand in the United Kingdom at one time. It should be added that the warship tonnage under construction in the country remains at a high level. Four years ago it stood at 95,000 tons displacement. In December, 1894, it amounted to 260,000 tons; in 1895, to 306,000 tons; in 1896 to 330,000 tons, and at the present time it amounts to 313,000 tons.

It appears that there have been built abroad, during the year, 253 steamers of 278,443 tons and 146 sailing vessels of 100,995 tons, in addition to 42 war vessels of 133,435 tons displacement. Among foreign countries, the three leading places are held by Germany (140,000 tons), United States of America (87,000 tons), and France (49,000 tons). Included in the figures for Germany are three steamers of more than 12,000 tons each, viz:

	Tons gross
Kaiser Wilhelm der Grosse.....	14,349
Kaiser Friedrich (approximate).....	12,500
Pretoria (approximate).....	12,500

A large warship tonnage (51,000 tons displacement) has also been launched in Germany during the year. Of the tonnage reported from the United States, about 60 per cent. does not affect the general commerce of the world, but is intended exclusively for service on the Great Lakes of North America. As showing the size of vessels employed in this special trade, it is interesting to note that three steamers have been built for it during 1897 of upwards of 4,000 tons each, besides seven sailing barges ranging between 3,180 and 3,800 tons. As regards French shipbuilding, the most noticeable feature has recently been the development of the construction of large sailing vessels. Five such vessels, of 2,900 tons and above, have been launched during the year, all having been built under the supervision of Lloyd's Register. The largest of these, and also the largest seagoing sailing vessels built in the world in 1897, are the

	Tons gross
Quevilly.....	3,482
Atlantique.....	3,094
Jaqueline.....	3,017

The total output of the world during 1897 (exclusive of war ships), appears to have been about 1,331,000 tons (1,202,000 steam, 129,000 sail). Lloyd's Register Wreck Returns show that the tonnage of all nationalities totally lost, broken up, etc., in the course of twelve months, amounts to about 712,000 tons (316,000 steam, 396,000 sail). It will thus be seen that, while the sailing tonnage of the world has been

reduced by 267,000 tons during 1897, the steam tonnage has increased by about 886,000 tons. The net increase of the world's mercantile tonnage is, therefore, 619,000 tons. Of this total, the net increase in the tonnage of the United Kingdom, as given above, is rather less than 8 per cent. Of the new tonnage launched, however, the United Kingdom has acquired about 54 per cent.

SOCIETY OF NAVAL ENGINEERS.

The members of the American Society of Naval Engineers attended a meeting January 8, held at Washington. The chief feature of the assembling was the reading and discussion of the prize essay by P. A. Engineer W. W. White, U. S. N. His paper was entitled "Facts, Not Fiction," its subject being "Steam Consumption of the Main and Auxiliary Machinery of the U. S. S. Minneapolis."

Great interest was manifested in the paper, and it was generally discussed by the engineers present. Mr. McFarland declared that the society was to be congratulated on possessing such a valuable document. Mr. F. W. Wheeler, of New York, declared that thousands of dollars in heat was being annually washed into the sea from government war vessels in the shape of the hot water and steam pumped out by the circulating machines. An auxiliary heating system should be installed, he said, and this waste water used for heating the water that is later pumped into the boilers.

In a paper on "American Steam Yachts", by Mr. Irving Cox, it was stated for a first-class cruiser, entertaining ten

guests, the cost of maintenance is from \$3,600 to \$4,000 per month.

Papers were read on "Test of the Niclausse Safety Water Tube Boiler," by J. M. Whitman, and "Water Tube Boilers," by Darwin Almy.

It was the general consensus of opinion that some improvements were needed in every style of marine boiler extant. Various faults were pointed out in the boilers now in use. A boiler of durable and improved type, as stable and durable as the locomotive boiler, it was stated, is an imperative demand, and inventors should turn their attention to the subject.

Mr. John Platt, of New York, at the Saturday afternoon session, read a most interesting description of a boat built in England. It is the hydraulic lifeboat Queen, built by Thornycroft. She is 55 feet long, 15 feet broad and 5 feet 6 inches deep, and of 30 tons displacement. Through nozzles 9 inches in diameter, a centrifugal pump driven by a steam engine, discharges below the water, two jets which drive the vessel forward, and two placed in the opposite direction are for drawing her astern. By making the jets go in one direction or the other the vessel can be easily maneuvered, and readily stopped or started. The jets will discharge one ton of water per second when the boat is going nine knots per hour, and on trial it was found possible to run the boat nine and a half knots per hour. The annual meeting was adjourned at 5 o'clock Saturday afternoon. All the papers which had not been read, as the time was limited, were ordered printed.

Chief Engineer Harrie Webster, U. S. N., presided, and was re-elected president, and P. A. Engineer W. M. McFarland, secretary and treasurer. Chief Engineer G. W. Baird and P. A. Engineers W. W. White and E. Theiss were elected to the council. The report of the council was very brief, declaring that in the matter of a button or badge for the society, it had been decided to adopt a rosette of gilt and red.

PRAISE FOR THE LIFE-SAVERS.

In the course of a recent talk on the stranding of the steamer Gogebic on North Manitou Island late last fall, Capt. W. D. Neal, of Milwaukee, spoke in terms of the highest praise of Capt. W. L. Andres and his crew of life-savers stationed on North Manitou Island and the valuable service rendered by them. To reach with their surf boat the point where the Gogebic lay stranded it was necessary to cut a roadway through a dense undergrowth of wood and proceed through snow averaging two feet in depth. After this had been accomplished the men worked incessantly until the steamer was released, notwithstanding the fact that their term of service for the season had expired before this could be accomplished. A better, braver or more willing crew is not to be found anywhere, Capt. Neal asserted.

The North Branch Lumber Co., Chicago, have sold the steamer Chas. Rietz, and barge John Mark, to John C. Nessen, of Manistee.

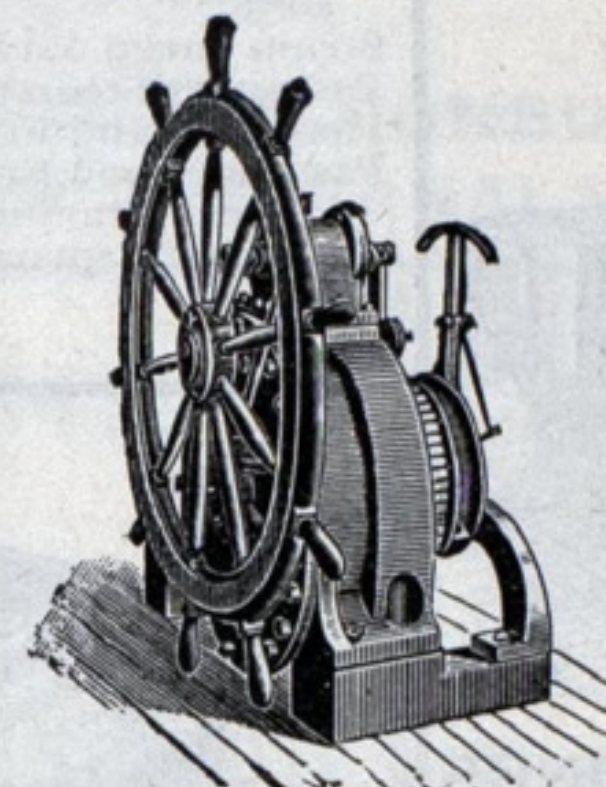
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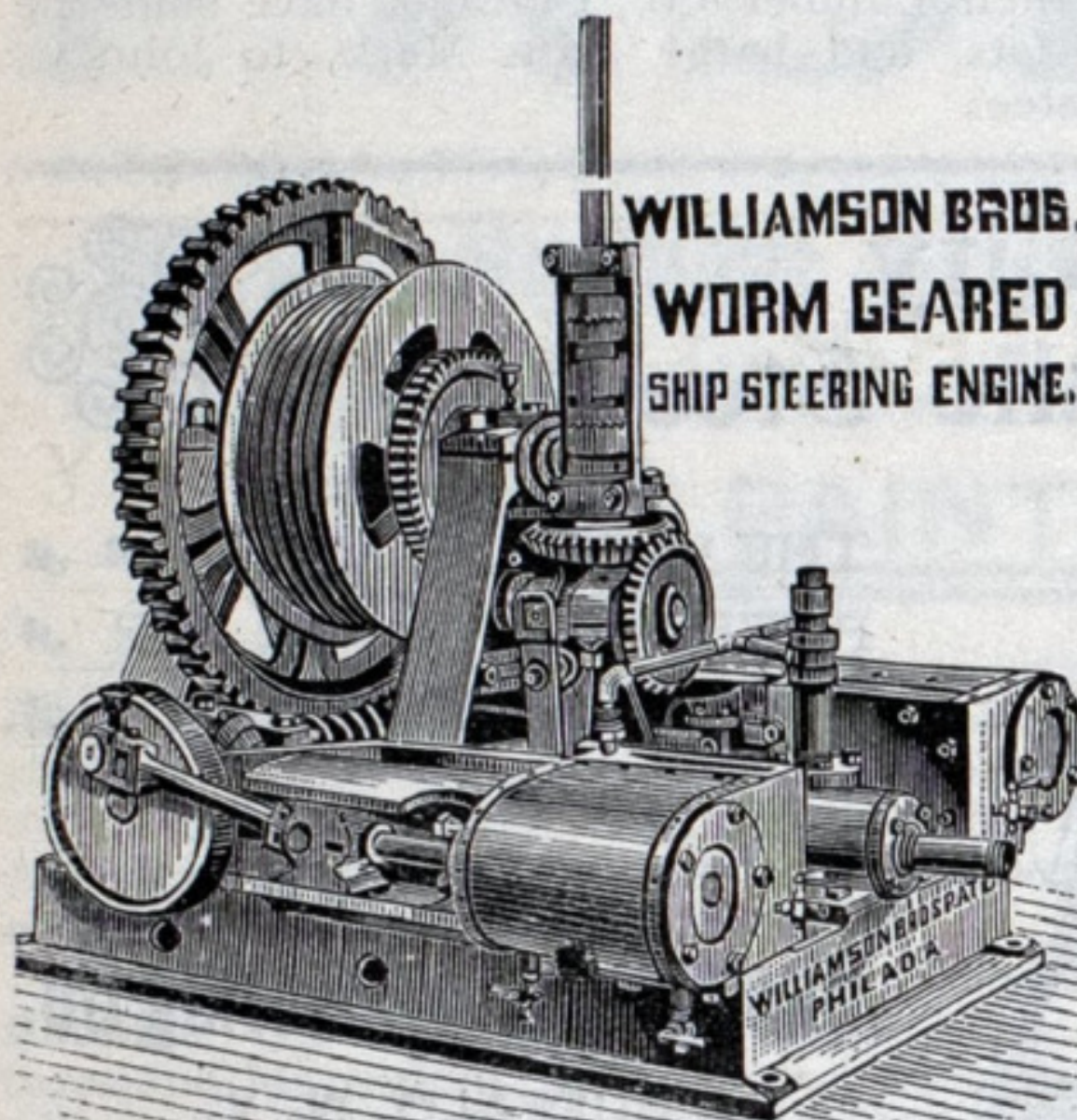


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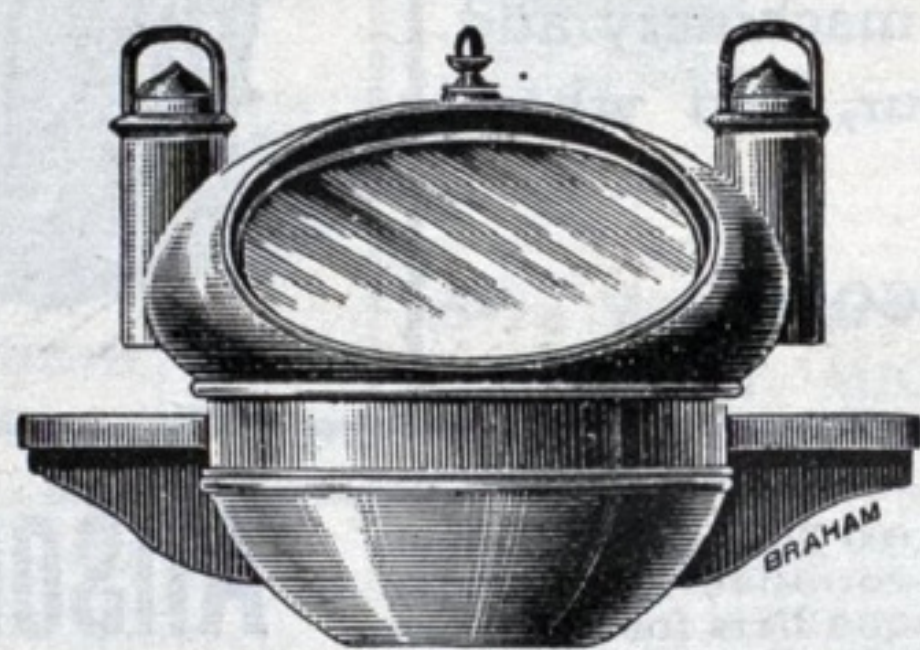
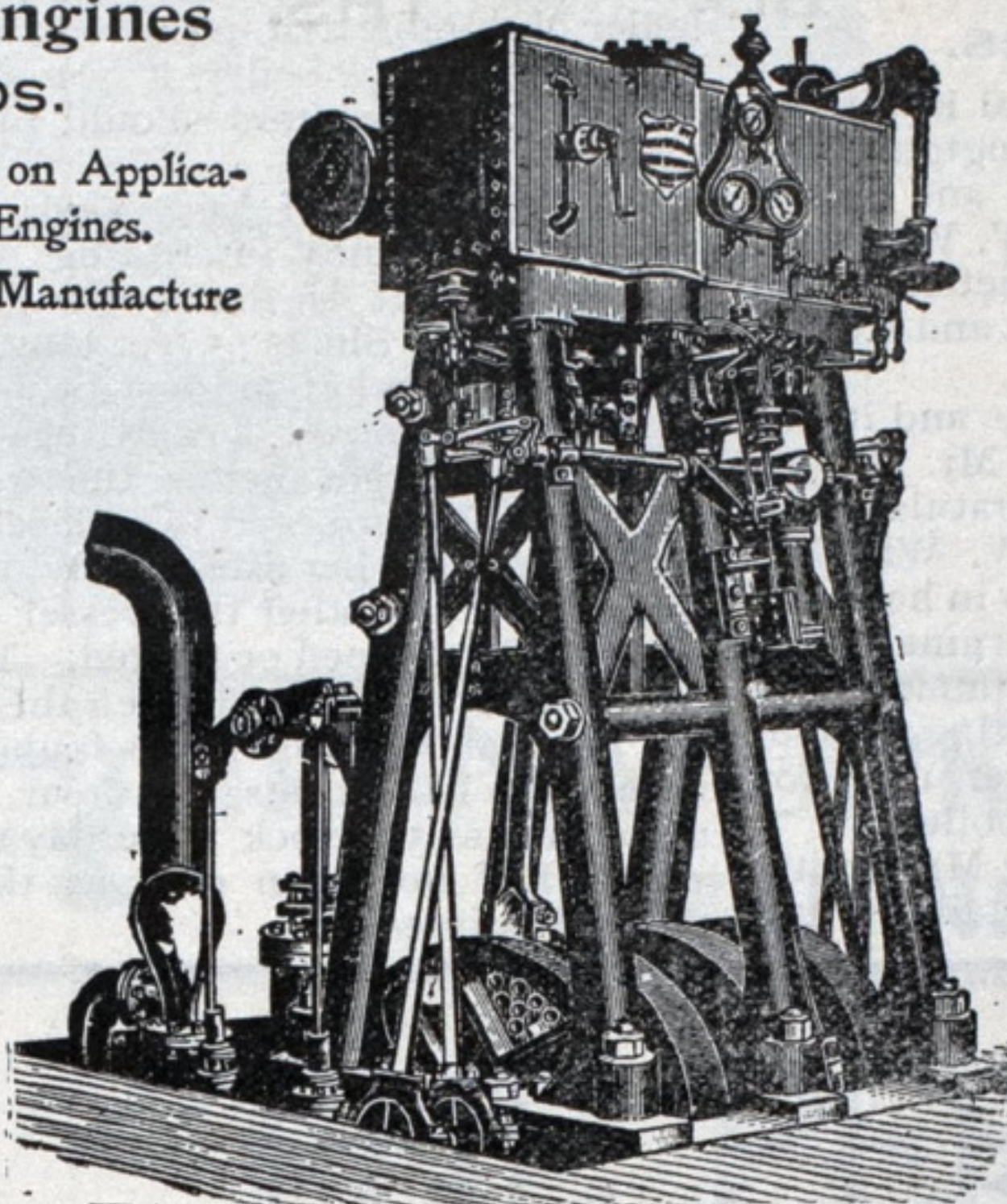
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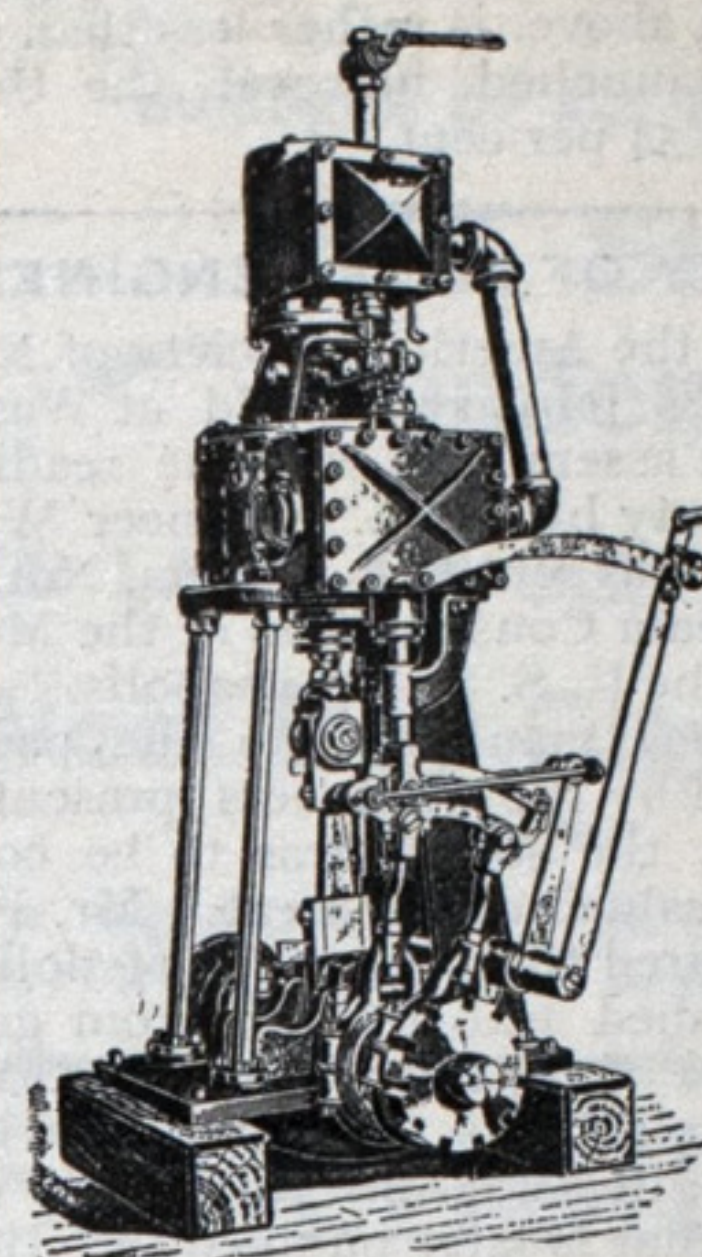
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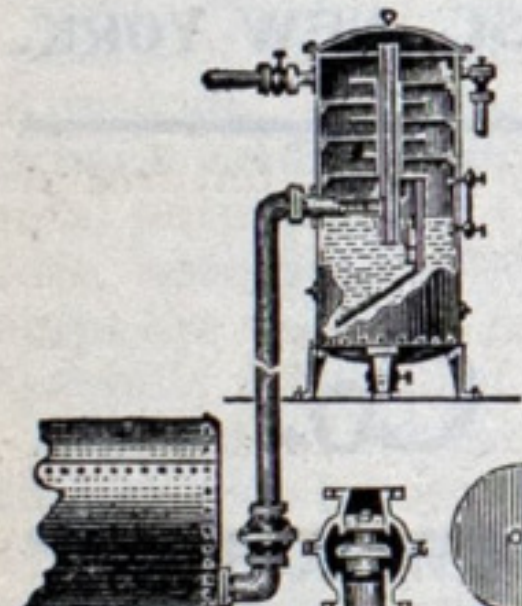
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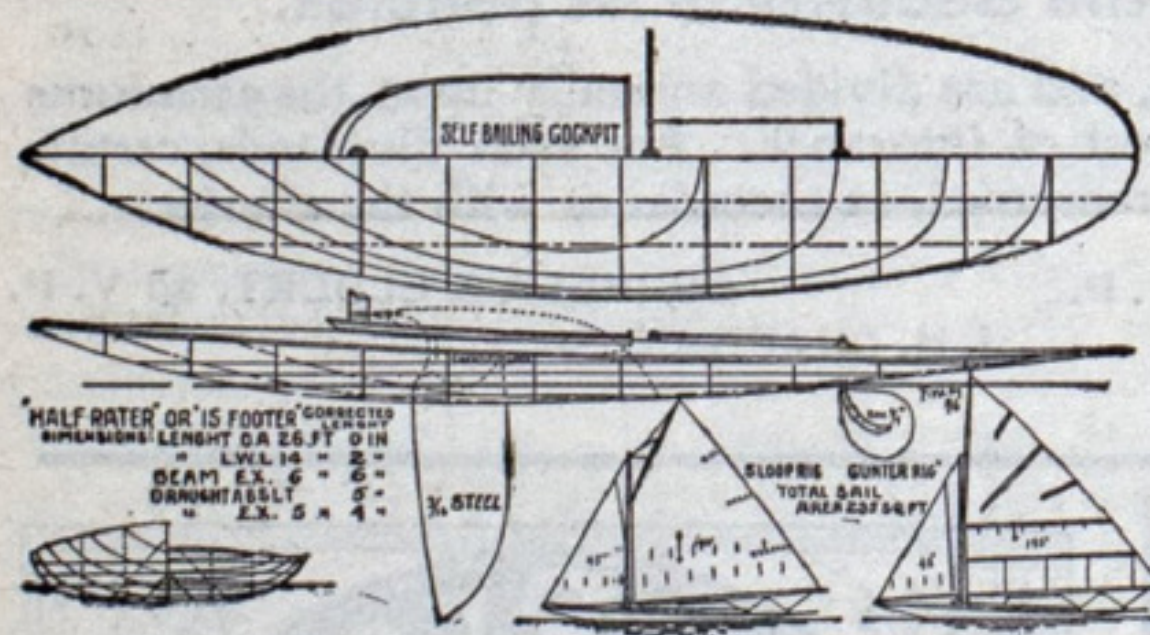
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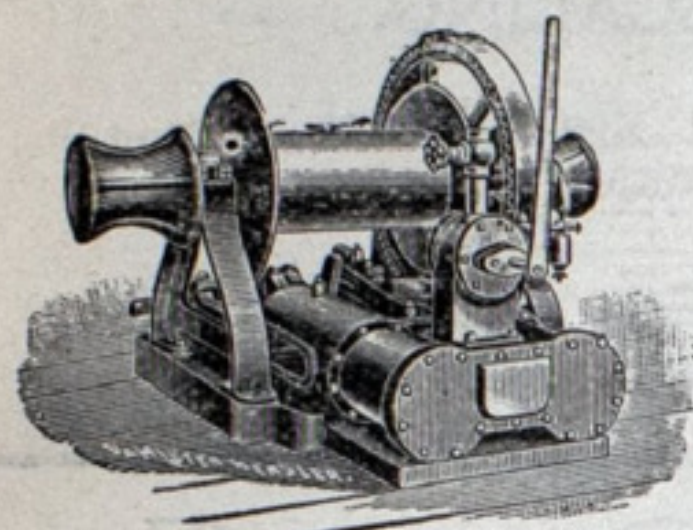
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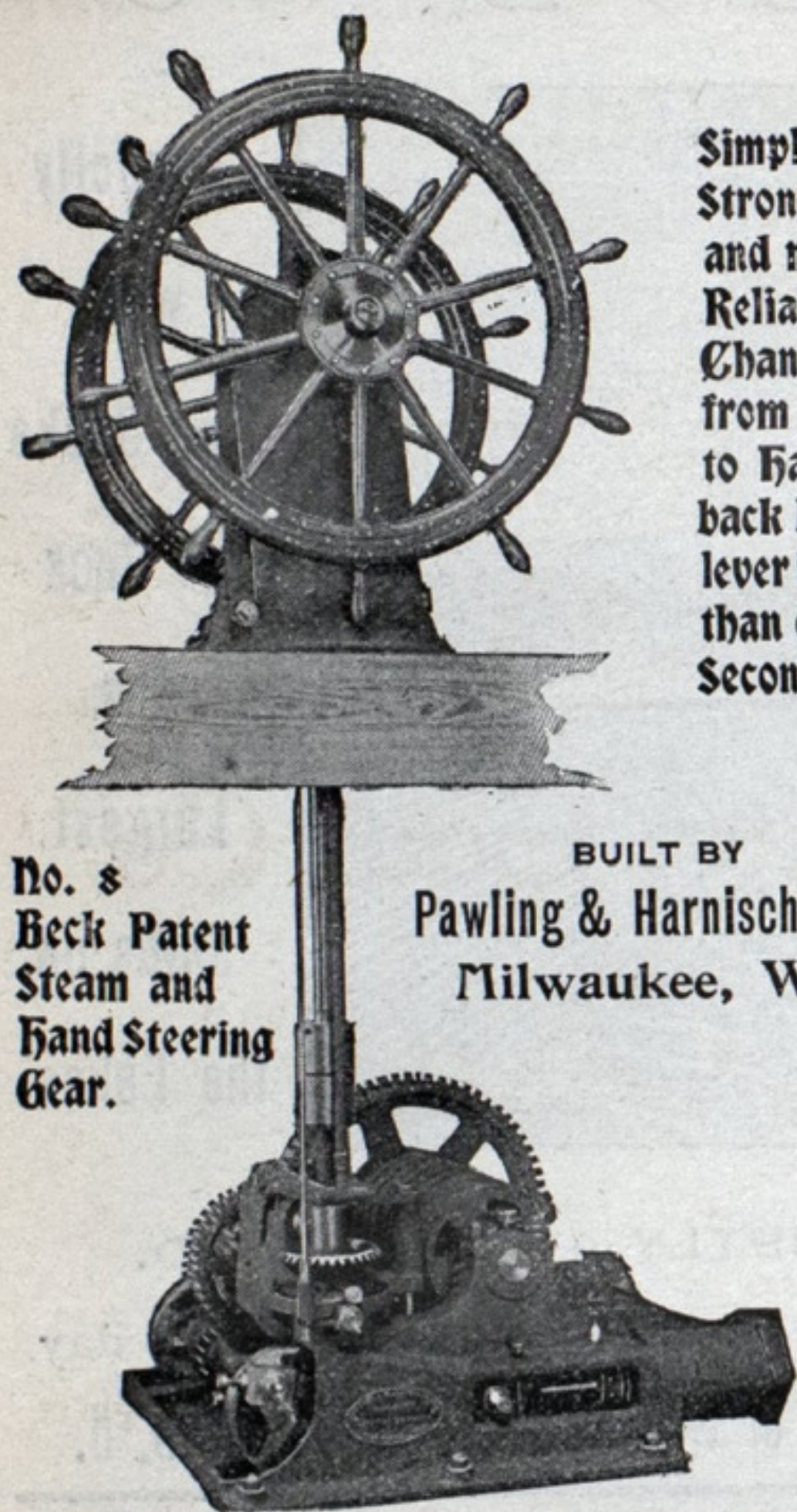
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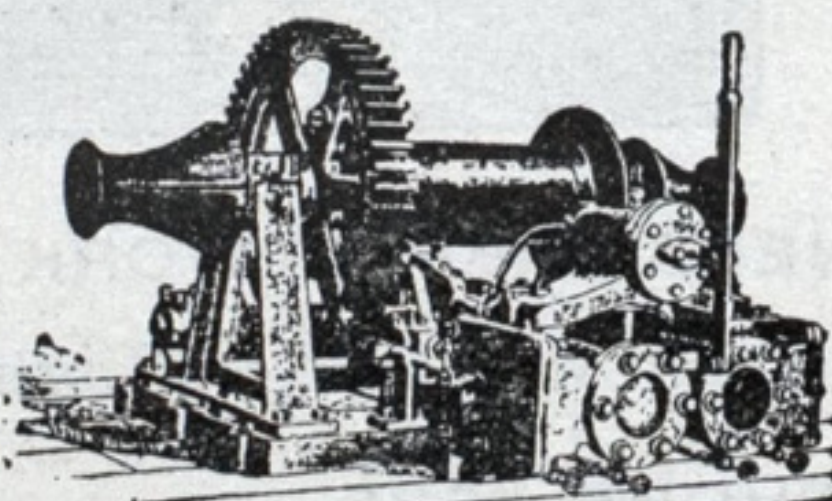
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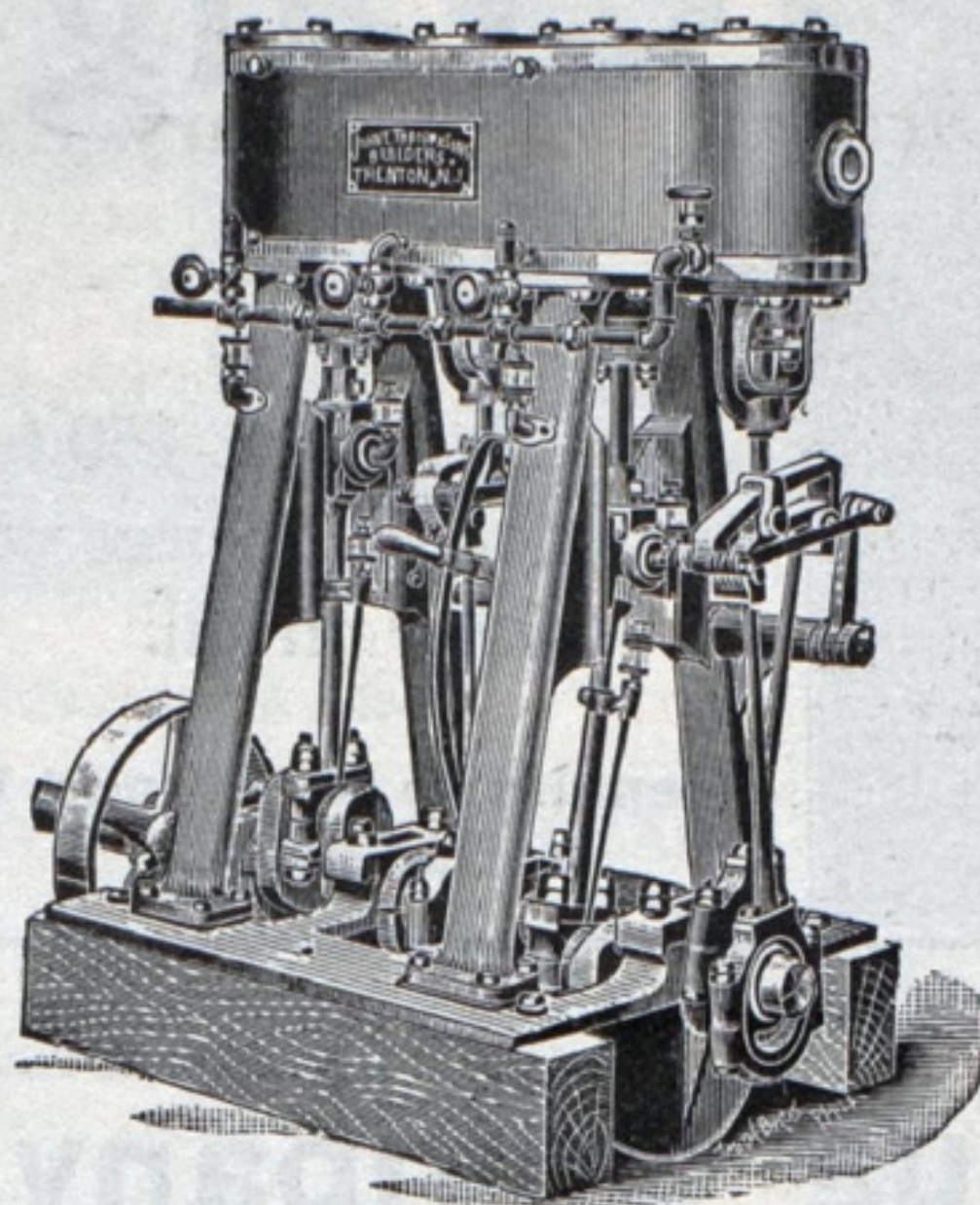
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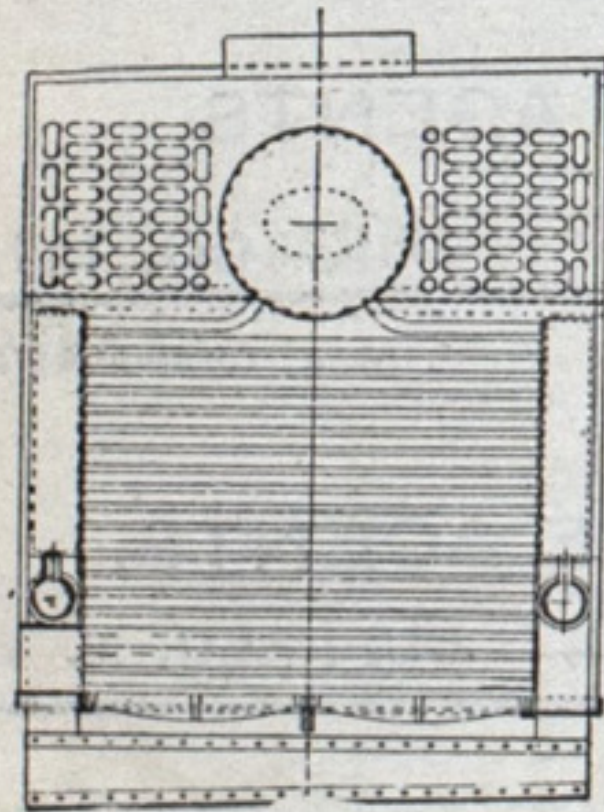
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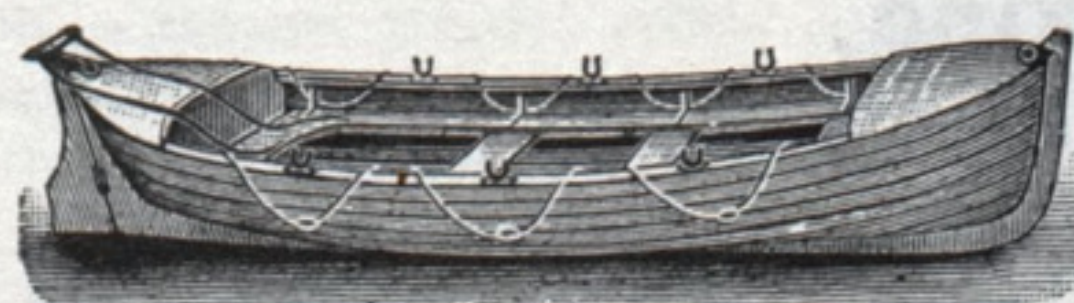
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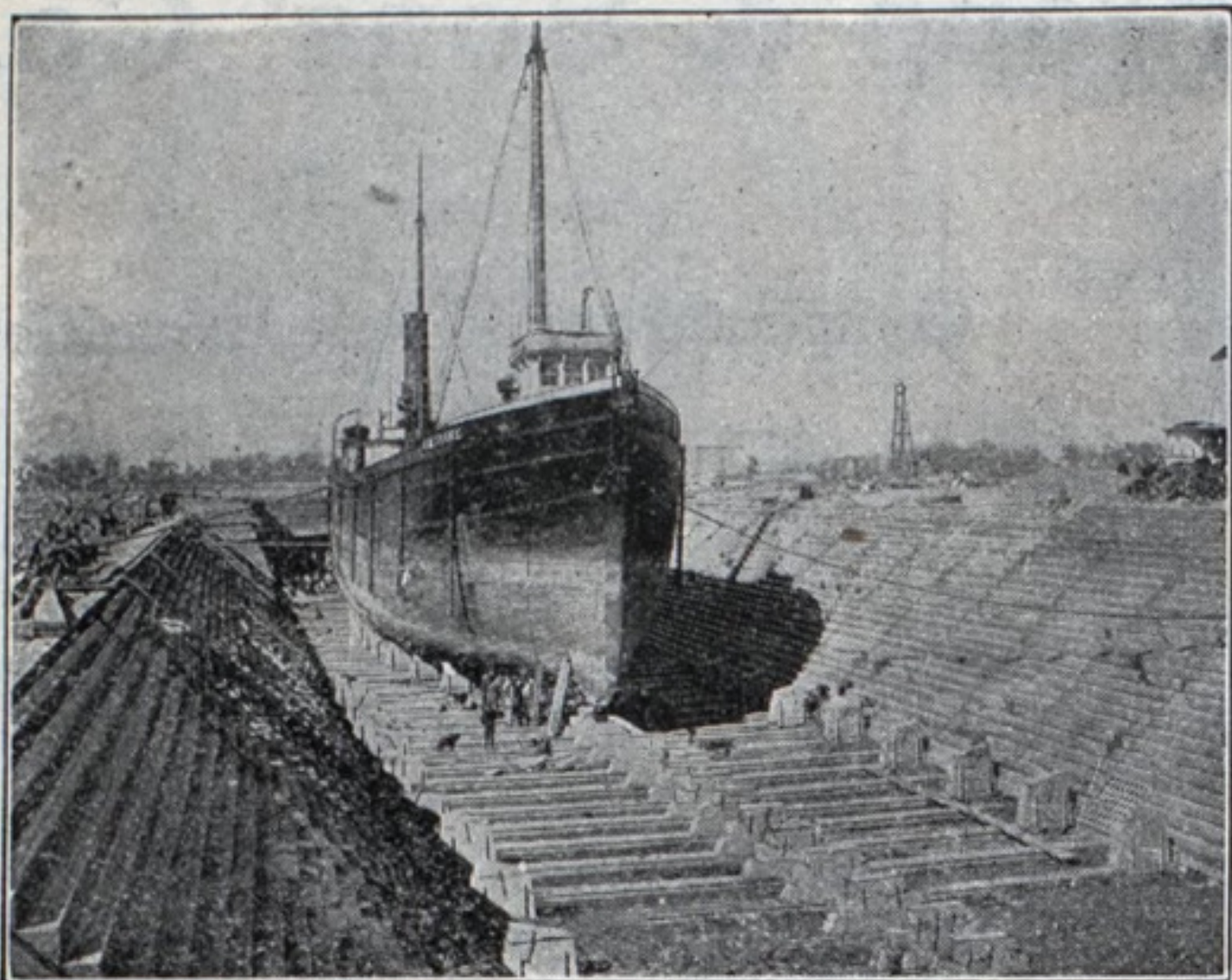
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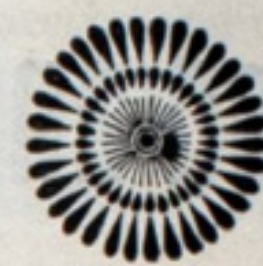
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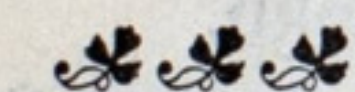
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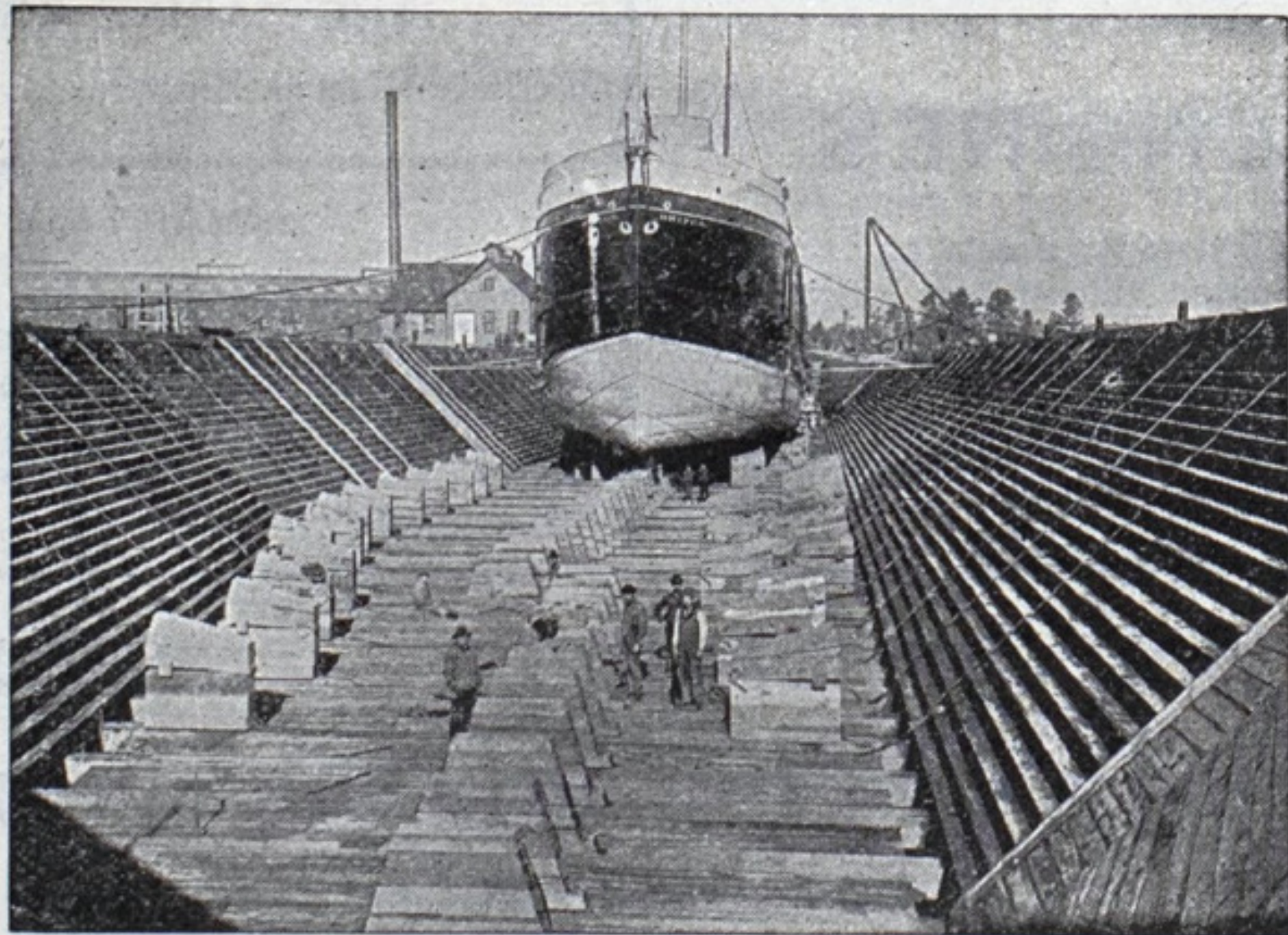
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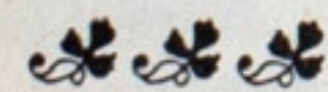
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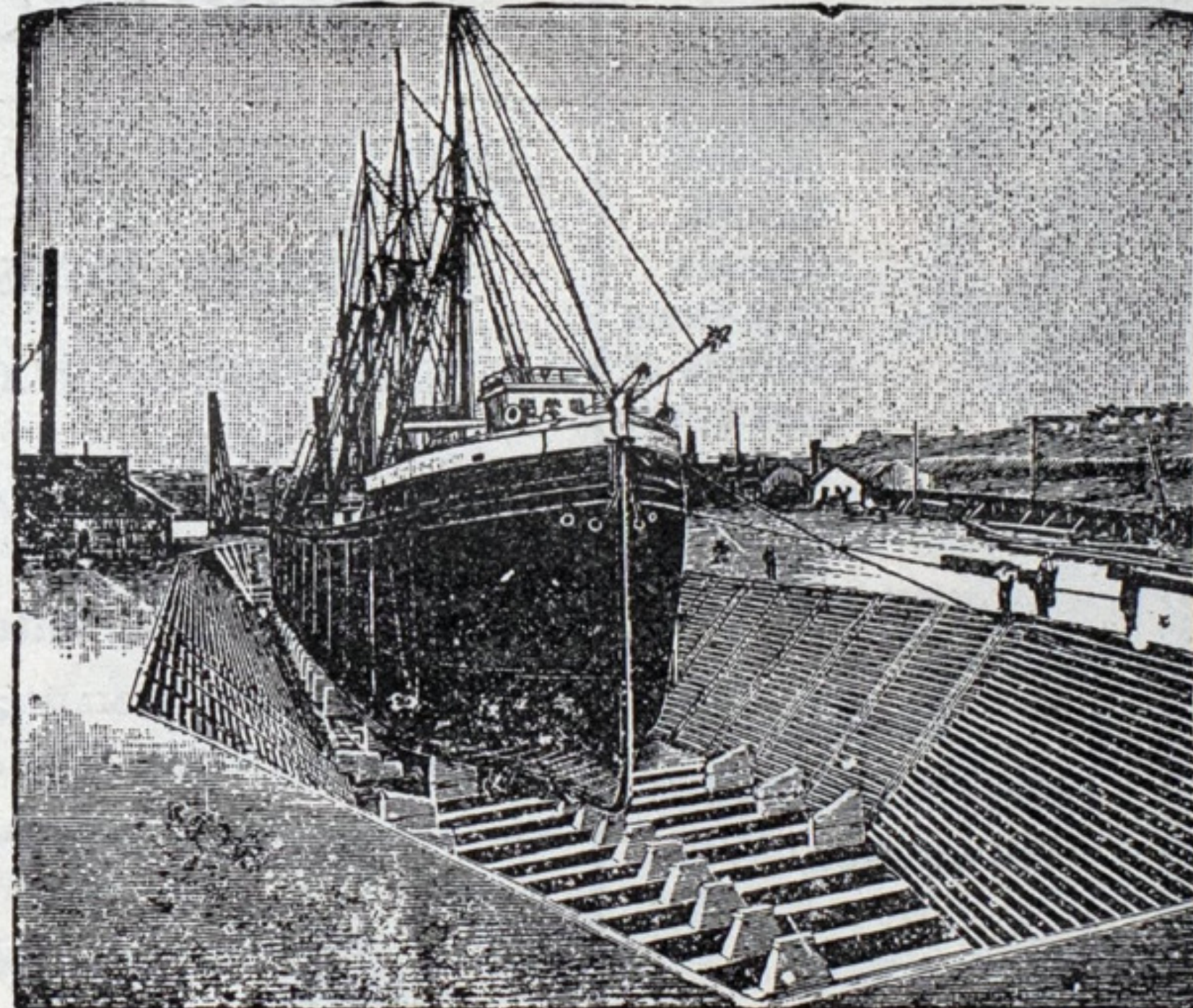
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